

## **TECHNICAL FISHERY REPORT 93-07**

---



Alaska Department of Fish and Game  
Commercial Fisheries Management  
and Development Division  
P.O. Box 25526  
Juneau, Alaska 99802-5526

June 1993

---

### **Salmon Catch and Escapement Statistics For Copper River, Bering River, and Prince William Sound, 1989**

**By**

**John A. Wilcock**

The Technical Fishery Report Series was established in 1987, replacing the Technical Data Report Series. The scope of this new series has been broadened to include reports that may contain data analysis, although data oriented reports lacking substantial analysis will continue to be included. The new series maintains an emphasis on timely reporting of recently gathered information, and this may sometimes require use of data subject to minor future adjustments. Reports published in this series are generally interim, annual, or iterative rather than final reports summarizing a completed study or project. They are technically oriented and intended for use primarily by fishery professionals and technically oriented fishing industry representatives. Publications in this series have received several editorial reviews and at least one *blind* peer review refereed by the division's editor and have been determined to be consistent with the division's publication policies and standards.

SALMON CATCH AND ESCAPEMENT STATISTICS FOR COPPER RIVER,  
BERING RIVER, AND PRINCE WILLIAM SOUND, 1989

By

John A. Wilcock

Technical Fishery Report No. 93-07

Alaska Department of Fish and Game  
Commercial Fisheries Division  
Juneau, Alaska

June 1993

## **AUTHOR**

John A. Wilcock is a Fishery Biologist III with the Alaska Department of Fish and Game, Division of Commercial Fisheries, P.O. Box 669, Cordova, Alaska 99574-0669.

## **ACKNOWLEDGMENTS**

The author would like to thank all the supervisors, managers, tender captains, dock foremen, floor bosses, office personnel, and individuals in the salmon processing industry who have provided assistance to our catch sampling program in the port of Cordova. The ADF&G catch and escapement sampling crew members were: Ellen Simpson, Scott Jordan, Diane Phipps, Joyce Restad, Michael Traffas, and Blaine McKnight. The author would like to thank his predecessor, Drew Crawford, who supervised this crew and organized the original data. Cordova Area management biologists, James Brady, Keith Schultz, Ellen Simpson, Evelyn Biggs, Slim Morstad, and their data entry staff, Leah Gilman and Jill Phillips, provided the basic catch and escapement data for this report. Ken Roberson supervised the collection of samples from the subsistence and personal use fisheries on the upper Copper River. Chinook salmon sport catches and escapements were sampled by Anchorage office Sport Fish Division staff under the direction of Craig Whitmore. The Collins family of Long Lake deserves special recognition for volunteering their time and effort to install, maintain, and operate a weir at Long Lake. The author would also like to acknowledge Sam Sharr, Research Project Leader for the Prince William Sound area, for his guidance toward completion of this report.

## TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES .....	v
LIST OF FIGURES .....	vii
LIST OF APPENDICES .....	ix
ABSTRACT .....	xv
INTRODUCTION .....	1
Description of Area .....	1
Copper/Bering River .....	1
Prince William Sound .....	2
METHODS .....	3
Catch and Escapement Enumeration .....	3
Catch .....	4
Hatchery Returns .....	4
Escapement .....	4
Description of Sampling Procedures .....	5
Catch Sampling .....	5
Commercial Fisheries .....	5
Subsistence and Personal Use Fisheries .....	7
Escapement Sampling .....	7
Copper/Bering River .....	8
Prince William Sound .....	9
RESULTS AND DISCUSSION .....	9
Copper/Bering Rivers .....	10
Sockeye Salmon .....	10
Chinook Salmon .....	12
Coho Salmon .....	12
Prince William Sound .....	13
Sockeye Salmon .....	13
Coho Salmon .....	14
Chum Salmon .....	15
Pink Salmon .....	16
LITERATURE CITED .....	17

## TABLE OF CONTENTS (Continued)

	<u>Page</u>
TABLES .....	19
FIGURES .....	41
APPENDIX .....	63

## LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Salmon harvest and indexed escapement by species and fishery from the Copper/Bering River and Prince William Sound areas, 1989 .....	19
2. Commercial salmon harvest by species, gear type and district, for the Copper/Bering River and Prince William Sound areas, 1989 .....	20
3. Subsistence and personal use harvest by species, fishery, and gear type for the Copper/Bering River and Prince William Sound areas, 1989 .....	21
4. Sport fishery harvest and effort by location and species in the upper Copper River and in the Copper River delta, Bering River, and Prince William Sound areas combined, 1989 .....	22
5. Salmon escapements and escapement indices by species and district in the Copper/Bering River and Prince William Sound areas, 1989 .....	23
6. Copper/Bering River area sockeye salmon commercial common property catch and effort by district and fishing period from fish ticket summaries, 1989 .....	24
7. Estimated age composition of Copper/Bering River area sockeye salmon in commercial common property drift gillnet catches and upper Copper River subsistence and personal use fish wheel and dip net catches, 1989 .....	25
8. Estimated age composition of sockeye salmon in escapements to the Copper and Bering River systems, 1989 .....	26
9. Copper/Bering River area chinook salmon commercial common property catch and effort by district and fishing period from fish ticket summaries, 1989 .....	27
10. Estimated age composition of Copper River area chinook salmon in commercial common property drift gillnet catches, rod & reel sport catches, and escapements, 1989 .....	28
11. Copper/Bering River area coho salmon commercial common property catch and effort by district and fishing period from fish ticket summaries, 1989 .....	29
12. Estimated age composition of Copper/Bering River area coho salmon in commercial common property drift gillnet catches, 1989 .....	30
13. Prince William Sound sockeye salmon weekly commercial common property catch and effort by district and gear type from final fish ticket summaries, 1989 .....	31
14. Estimated age composition of sockeye salmon in Prince William Sound commercial common property drift gillnet catches, 1989 .....	32

## LIST OF TABLES (Continued)

<u>Table</u>	<u>Page</u>
15. Estimated age composition of sockeye salmon in sampled escapements to Prince William Sound, 1989 .....	33
16. Prince William Sound coho salmon weekly commercial common property catches by district and gear type from fish ticket summaries, 1989 .....	34
17. Estimated age composition of coho salmon in Prince William Sound commercial common property drift gillnet and purse seine catches, 1989 .....	35
18. Prince William Sound chum salmon weekly commercial common property catches by district and gear type from fish ticket summaries, 1989 .....	36
19. Estimated age composition of chum salmon in Prince William Sound commercial common property purse seine and gillnet catches, 1989 .....	37
20. Estimated hatchery contributions of chum salmon to the commercial common property fishery harvests, hatchery cost recovery harvests, hatchery brood stock escapements, and chum salmon total return to Prince William Sound, 1989 .....	38
21. Prince William Sound pink salmon weekly commercial common property catches by district and gear type from fish ticket summaries, 1989 .....	39
22. Estimated hatchery contributions of pink salmon to the commercial common property fishery harvests, hatchery cost recovery harvests, hatchery brood stock escapements, and pink salmon total return to Prince William Sound, 1989 .....	40



## LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. Prince William Sound area showing commercial fishing districts, hatcheries, and weir locations .....	41
2. The Copper Bering/River area and the major coastal spawning areas which contribute to the commercial fisheries .....	42
3. The location of the personal use fishery near Chitna and the subsistence fishery which extends from Chitna to Slana along the upper Copper River .....	43
4. Weekly sockeye salmon commercial common property catches from the drift gillnet fisheries of the Copper River and Bering River Districts, 1989 .....	44
5. Temporally stratified age composition of sockeye salmon from the commercial common property drift gillnet fisheries in the Copper River and Bering River Districts, 1989 .....	45
6. Daily sockeye salmon catch in the combined subsistence and personal use fisheries and the temporally stratified age composition of those catches, upper Copper River, 1989 .....	46
7. Sockeye salmon escapement to the upper Copper River, Copper River Delta, and Bering River and the estimated age composition of those escapements, 1989 .....	47
8. Daily counts of the sockeye salmon escapement to the upper Copper River past the Miles Lake sonar project site and the temporally stratified age composition of that escapement, 1989 .....	48
9. Weekly chinook salmon catches from the Copper River District commercial common property drift gillnet fishery and the temporally stratified age composition of those catches, 1989 .....	49
10. Weekly coho salmon catches from the Copper River District and Bering River District commercial common property drift gillnet fisheries, 1989 .....	50
11. Temporally stratified age composition of coho salmon from the commercial common property drift gillnet fisheries in the Copper River and Bering River Districts, 1989 .....	51
12. Weekly sockeye salmon catches from the Coghill District and Unakwik District commercial common property drift gillnet fisheries, 1989 .....	52
13. Temporally stratified age composition of sockeye salmon from the commercial common property drift gillnet fisheries in the Coghill and Unakwik Districts, 1989 .....	53

## LIST OF FIGURES (continued)

<u>Figure</u>	<u>Page</u>
14. Daily sockeye escapement through the weir below Coghill Lake and the temporally stratified age composition of that escapement, Prince William Sound, 1989 .....	54
15. Daily sockeye escapement through the weir at the head of Eshamy Lagoon and the temporally stratified age composition of that escapement, Prince William Sound, 1989 .....	55
16. Weekly chum salmon catches from the major commercial common property purse seine and drift gillnet fisheries, Prince William Sound, 1989 .....	56
17. Temporally stratified age composition of sockeye salmon from the major commercial common property purse seine and drift gillnet fisheries and hatchery cost recovery fisheries, Prince William Sound, 1989 .....	58
18. Percentage of the total commercial common property pink salmon purse seine catch, and the percentage of wild stock pink salmon escapements which occurred in the major purse seine districts in Prince William Sound, 1989 .....	60
19. Weekly commercial common property pink salmon catches from the major purse seine districts in Prince William Sound, 1989 .....	61

## LIST OF APPENDICES

	<u>Page</u>
APPENDIX A: AGE AND SEX DATA FOR COMMERCIAL SALMON CATCHES FROM THE COPPER AND BERING RIVERS (DISTRICTS 200 AND 212).	
A.1 - Temporally stratified age and sex composition of sockeye salmon harvested in the Copper River District commercial common property drift gillnet fishery, 1989 .....	64
A.2 - Estimated age and sex composition of sockeye salmon harvested in the Bering River District commercial common property drift gillnet fishery, 1989 .....	67
A.3 - Temporally stratified age and sex composition of chinook salmon harvested in the Copper River District commercial common property drift gillnet fishery, 1989 .....	68
A.4 - Temporally stratified age and sex composition of coho salmon harvested in the Copper River District commercial common property drift gillnet fishery, 1989 .....	69
A.5 - Temporally stratified age and sex composition of coho salmon harvested in the Bering River District commercial common property drift gillnet fishery, 1989 .....	70
APPENDIX B: SUBSISTENCE, PERSONAL USE, AND SPORT FISH SALMON CATCHES FROM THE UPPER COPPER RIVER.	
B.1 - Daily catches of sockeye, chinook, and coho salmon in the subsistence and personal use fisheries on the upper Copper River, 1989 .....	72
B.2 - Temporally stratified age and sex composition of sockeye salmon harvested in upper Copper River personal use and subsistence fisheries, 1989 .....	76
B.3 - Estimated age and sex composition of chinook salmon sport fishing harvests at two locations in the upper Copper River area, 1989 .....	77

## LIST OF APPENDICES (Continued)

		<u>Page</u>
APPENDIX C:	SALMON ESCAPEMENTS TO COASTAL STREAMS OF THE COPPER RIVER DELTA AND THE BERING RIVER.	
C.1	- Aerial escapement indices for sockeye salmon returning to the Copper River Delta and the Bering River by date and location, 1989 . . . . .	80
C.2	- Aerial escapement indices for coho salmon returning to the Copper Delta and Bering River by date and location, 1989 . . . . .	82
C.3	- Estimated age and sex composition in the combined escapements of sockeye salmon to the Copper River Delta and Bering River drainages, 1989 . . . . .	85
C.4	- Estimated age and sex composition of the sockeye salmon escapement to the Copper River Delta, 1989 . . . . .	86
C.5	- Estimated age and sex composition of the sockeye salmon escapement to the Bering River drainage, 1989 . . . . .	89
APPENDIX D:	SALMON ESCAPEMENTS TO THE UPPER COPPER RIVER.	
D.1	- Daily Copper River salmon escapement estimates at the Miles Lake sonar site, 1989 . . . . .	92
D.2	- Sockeye salmon escapement through the Long Lake weir, 1989 . . . . .	94
D.3	- Peak aerial escapement estimates by date and location for the sockeye and chinook salmon returning to the upper Copper River drainage, 1989 . . . . .	95
D.4	- Temporally stratified age and sex composition of sockeye salmon in the upper Copper River escapement past the Miles Lake sonar facility estimated from fish sampled in the personal use and subsistence fisheries near Chitina, 1989 . . . . .	97
D.5	- Estimated age and sex composition of sockeye salmon carcasses sampled from the Gulkana River, 1989 . . . . .	98

## LIST OF APPENDICES (Continued)

	<u>Page</u>
APPENDIX E: AGE AND SEX DATA FOR COMMERCIAL SALMON CATCHES FROM PRINCE WILLIAM SOUND (DISTRICTS 221–229).	
E.1 - Estimated age and sex composition of sockeye salmon harvested in the Unakwik District commercial common property drift gillnet fishery, 1989 .....	100
E.2 - Temporally stratified age and sex composition of sockeye salmon harvested in the Coghill District commercial common property drift gillnet and purse seine fishery, 1989 .....	101
E.3 - Temporally stratified age and sex composition of chum salmon harvested in the Eastern District commercial common property purse seine fishery, 1989 .....	102
E.4 - Temporally stratified age and sex composition of chum salmon harvested in the Northern District commercial common property purse seine fishery, 1989 .....	103
E.5 - Temporally stratified age and sex composition of chum salmon harvested in the Coghill District commercial common property purse seine and gillnet fisheries, 1989 .....	104
E.6 - Temporally stratified age and sex composition of chum salmon harvested in the Main Bay hatchery cost recovery fishery, Eshamy District, 1989 .....	105
E.7 - Estimated age and sex composition of chum salmon harvested in the Southeastern District commercial common property purse seine fishery, 1989 .....	106
E.8 - Temporally stratified age and sex composition of coho salmon harvested in the Coghill District commercial common property drift gillnet and purse seine fisheries, 1989 .....	107

## LIST OF APPENDICES (Continued)

		<u>Page</u>
APPENDIX F:	SALMON ESCAPEMENTS TO COASTAL STREAMS IN PRINCE WILLIAM SOUND.	
F.1	- Daily escapement counts of sockeye, chinook, pink, and chum salmon through Coghill River weir, 1989 .....	110
F.2	- Daily escapement counts of sockeye, chinook, chum, and pink salmon through the weir at the head of Eshamy Lagoon, 1989 .....	111
F.3	- Daily escapement counts of sockeye, chinook, coho, pink, and chum salmon through Jackpot weir, 1989 .....	113
F.4	- Sockeye salmon aerial escapement counts from selected systems in Prince William Sound, 1989 .....	114
F.5	- Weekly aerial estimates of the escapement of live pink salmon to selected streams in Prince William Sound, 1989 .....	115
F.6	- Weekly aerial estimates of the escapement of live chum salmon to selected streams in Prince William Sound, 1989 .....	121
F.7	- Temporally stratified age and sex composition of the sockeye salmon escapement through the weir on the outlet stream of Coghill Lake, 1989 .....	127
F.8	- Temporally stratified age and sex composition of the sockeye salmon escapement through the weir at the head of Eshamy Lagoon, 1989 .....	128
F.9	- Estimated age and sex composition of the sockeye salmon escapement through the Jackpot weir, 1989 .....	129
F.10	- Daily brood stock counts of chum salmon at Wally H. Noerenberg Hatchery, 1989 .....	130
F.11	- Estimated age and sex composition of chinook salmon in the Wally H. Noerenberg Hatchery brood stock, 1989 .....	131
F.12	- Temporally stratified age and sex composition of chum salmon in the Wally H. Noerenberg Hatchery brood stock, 1989 .....	132

## LIST OF APPENDICES (Continued)

	<u>Page</u>
APPENDIX G: MEAN LENGTH BY SEX AND AGE OF SALMON IN THE COMMERCIAL CATCHES AND ESCAPEMENTS OF THE COPPER/BERING RIVERS AND PRINCE WILLIAM SOUND.	
G.1 - Mean length by sex and age of sockeye salmon from the commercial common property drift gillnet catches in the Copper River District, 1989 . . . . .	134
G.2 - Mean length by sex and age of sockeye salmon from the commercial common property drift gillnet catches in the Bering River District, 1989 . . . . .	136
G.3 - Mean length by sex and age of chinook salmon from the commercial common property drift gillnet catches in the Copper River District, 1989 . . . . .	137
G.4 - Mean length by sex and age of coho salmon from the commercial common property drift gillnet catches in the Copper River District, 1989 . . . . .	138
G.5 - Mean length by sex and age of coho salmon from the commercial common property drift gillnet catches in the Bering River District, 1989 . . . . .	139
G.6 - Mean length by sex and age of sockeye salmon in personal use and subsistence, fish wheel and dip net catches from the upper Copper River near Chitina, 1989 . . . . .	140
G.7 - Mean length by sex and age of chinook salmon from sport fishery catches in the upper Copper River, 1989 . . . . .	141
G.8 - Mean length by sex and age of sockeye salmon escapements to the Copper River Delta, 1989 . . . . .	142
G.9 - Mean length by sex and age of sockeye salmon escapements to the Bering River, 1989 . . . . .	144
G.10 - Mean length by sex and age of chinook salmon carcasses sampled from the Gulkana River, 1989 . . . . .	145
G.11 - Mean length by sex and age of sockeye salmon from commercial common property purse seine and drift gillnet catches in the Coghill and Unakwik Districts, Prince William Sound, 1989 . . . . .	146
G.12 - Mean length by sex and age of sockeye salmon in sampled escapements to Prince William Sound, 1989 . . . . .	147
G.13 - Mean length by sex and age of chinook salmon escapements from the Wally H. Noerenberg Hatchery brood stock, 1989 . . . . .	148

## LIST OF APPENDICES (Continued)

	<u>Page</u>
G.14 - Mean length by sex and age of chum salmon escapements from the Wally H. Noerenberg Hatchery brood stock, 1989 .....	149
APPENDIX H: AVERAGE WEIGHTS OF SALMON IN THE COPPER/BERING RIVERS AND PRINCE WILLIAM SOUND COMMERCIAL CATCH.	
H.1 - Average salmon weights from the commercial common property gillnet and purse seine fisheries in the Copper/Bering Rivers and Prince William Sound, 1989 .....	152



## ABSTRACT

The 1989 catch and escapement statistics for all Alaskan salmon species *Oncorhynchus* in the Copper River, Bering River, and Prince William Sound areas add to previous years as a reference for management of the salmon resource in this area. Catch information was compiled from commercial fish tickets, subsistence and personal use fish permits, and a postal survey of sport fishermen. Escapement data were taken from aerial and ground surveys, side scan sonar counts, and weir counts. Stratified systematic samples of age, sex, length, and weight were collected from salmon catches and escapements using standard sampling techniques for each select species, gear type, and fishing district.

Commercial, subsistence, personal use, and sport fishermen harvested 24,685,166 salmon in the Copper River, Bering River, and Prince William Sound areas in 1989. Pink salmon *Oncorhynchus gorbuscha* were the most numerous species in Prince William Sound, more than 90% of which were hatchery returns. The escapement index for all species and all areas was 2,365,971 salmon. Temporal variations in age composition of the catch were observed for sockeye salmon *O. nerka* and chinook salmon *O. tshawytscha* in the Copper River District and for chum salmon *O. keta* in the Eastern, Northern, and Coghill Districts.

**KEY WORDS:** Salmon, *Oncorhynchus*, Copper River, Bering River, Prince William Sound, catch, escapement, age, length, sex, and weight

## INTRODUCTION

Estimated 1989 salmon *Oncorhynchus* catches and escapements for the Prince William Sound management area were summarized and integrated with age, sex, and size composition data to provide the basic biological information necessary for their effective management. This information can be used to predict run strength based on parent and brood year returns, evaluate hatchery contributions, and assess harvest policies designed to effect maximum sustained yield.

Harvest and escapement abundance data, as well as age, sex, and size information, are collected annually in resource monitoring programs maintained by the Alaska Department of Fish and Game (ADF&G). Detailed harvest and escapement information for 1989 is presented for the Prince William Sound Management Area by Gilman et al. (1989) and Brady et al. (1991). These estimates are combined with age, sex, and size data obtained in 1989 and summarized in this report by species for each sampled fishery. This report builds upon the database established by Sharr and Peckham (1988), Sharr et al. (1988), Crawford and Simpson (1989), and Crawford and Simpson (1990). Detailed information for each fishery is presented in the Appendix.

### *Description of Area*

The Prince William Sound management area is divided into 11 fishing districts that encompass coastal waters and associated inland watersheds of the Gulf of Alaska between Cape Suckling and Cape Fairfield (Figure 1). The Copper River District (212) and Bering River District (200) to the east of Hook Point, Hinchinbrook Island have historically been treated as a discrete unit termed the Copper/Bering River area (Figure 2). Prince William Sound proper (PWS) lies to the west of Hook Point and includes the Eastern (221), Northern (222), Coghill (223), Northwestern (224), Eshamy (225), Southwestern (226), Montague (227), and Southeastern (228) Districts. The Unakwik District, previously designated as District 222-50, was redesignated as District 229 beginning in 1989.

#### **Copper/Bering River Area**

Drift gillnets are the only legal commercial gear type in the Copper and Bering River Districts. Sockeye *Oncorhynchus nerka*, coho *O. kisutch*, and chinook salmon *O. tshawytscha* are the predominant species in the Copper River District harvest. In the Bering River District, sockeye and coho salmon dominate the catch. Pink *O. gorbuscha* and chum salmon *O. keta* catches are generally quite small and considered incidental in both districts.

A subsistence fish wheel fishery on the upper Copper River extends from Chitina to Slana (Figure 3). In addition, a personal use dip net and fish wheel fishery is restricted to a few miles of the river near Chitina. Both subsistence and personal use fisheries harvest large numbers of sockeye salmon and lesser numbers of chinook and coho salmon. Subsistence fishing is also permitted in the coastal commercial fishing areas simultaneously with commercial openings, but harvests of all species are generally low.

The sport fishery in the Copper/Bering River area targets primarily chinook and sockeye salmon in the upper Copper River drainage and coho and sockeye salmon in a few coastal streams.

Hatchery runs of sockeye salmon to the Copper River originate from the Gulkana I and II streamside incubation facilities located on the Gulkana River in the upper Copper River drainage. These facilities are owned and operated by the Alaska Department of Fish and Game (ADF&G), Division of Fisheries Rehabilitation, Enhancement and Development (FRED).

Wild stocks of sockeye salmon in the Copper and Bering River Districts spawn in tributaries and lakes of the upper Copper River, small coastal streams in the Copper River delta, and tributaries of the Bering River (ADF&G 1962). Coho salmon spawn primarily in coastal streams; chinook salmon spawn almost exclusively in the upper Copper River (ADF&G 1964; Thompson 1964).

### **Prince William Sound Area**

Salmon of wild and hatchery origin are harvested in commercial fisheries throughout PWS. Several terms have been used to distinguish between the individual elements of the commercial harvest:

*Commercial Common Property Catch*—all salmon that are caught and sold by the commercial fishing fleet, or *commercial fishery*, regardless of gear type.

*Hatchery Cost Recovery Catch*—all salmon caught and sold by private non-profit hatcheries to pay for their operating expenses. This catch is taken in a special harvest area (SHA) adjacent to the hatchery by fishermen under contract to the facility operators (reported in previous publications as *hatchery sales harvest*).

*Total Commercial Catch*—all salmon that are caught and commercially sold.

Purse seines are generally permitted in commercial (common property) fisheries in all districts of PWS except the Eshamy District (225), where only set gillnet and drift gillnet fisheries are permitted. Drift gillnets are also permitted in the Coghill (223) and the Unakwik (229) Districts. The Eshamy, Southwestern, and Montague Districts were closed to fishing in 1989 because of the potential for contamination of catches by oil from the Exxon Valdez spill.

Purse seine fisheries harvest most of the total pink and chum salmon commercial catch, as well as significant incidental catches of sockeye salmon. Gillnet fisheries, having much smaller total harvests, traditionally target sockeye salmon. In recent years large catches of pink and chum salmon have coincided with increased hatchery production of these species. Historically, harvests of chinook and coho salmon in PWS have been incidental; but fishermen have recently begun to target coho salmon returns to the Wally H. Noerenberg Hatchery on Esther Island. Initial returns of coho salmon to this facility began in 1987 from releases the previous year. Substantial coho catches also occur in the Valdez Arm and Port Valdez areas from Solomon Gulch Hatchery releases.

Subsistence harvests of salmon in PWS, composed primarily of sockeye salmon, are extremely small.

Pink and coho salmon are the predominant species harvested in PWS sport fisheries. Although the harvest occurs primarily in salt water, considerable sport fishing is also directed toward sockeye salmon in Coghill River and Eshamy Lagoon.

Five hatcheries are currently operating in PWS: the Solomon Gulch, Cannery Creek, Wally H. Noerenberg (WNH), Main Bay, and Armin F. Koernig (AFK) Hatcheries (Figure 1). The Solomon Gulch, WNH, and AFK facilities are owned and operated by private, non-profit organizations and primarily produce pink and chum salmon. The Cannery Creek facility, which primarily produces pink salmon, is owned by the State of Alaska and has been operated under contract by the Prince William Sound Aquaculture Corporation (PWSAC) since July of 1988. The Main Bay Hatchery, also owned by the State of Alaska, is operated by the Alaska Department of Fish and Game Division of Fisheries Rehabilitation Enhancement and Development. Currently the Main Bay Hatchery is raising full-term, one-check (reared in the hatchery over winter) sockeye salmon smolts. This facility originally produced chum salmon, some of which will continue to return for the next few years.

Pink and chum salmon wild stocks spawn in many small coastal streams on the mainland and islands throughout PWS. The largest sockeye escapements occur in Coghill Lake and Eshamy Lake. Other sockeye spawning areas include Cowpen, Miners, and Jackpot Lakes.

Harvest patterns for PWS in 1989 were substantially altered from traditional fishing patterns as a result of the Exxon Valdez oil spill (Brady et al. 1990). Commercial common property harvests were generally confined to terminal areas and concentrated in more northerly districts in 1989 than in recent years. Fishing districts in the western and southern portions of the sound were closed to prevent contamination of catches by oil exiting PWS to the west and south. A major impact of these actions was closure of the Southwestern District, which encompasses an entrance to PWS known to be a migratory pathway used by wild pink salmon stocks as well as hatchery stocks returning to other districts (McCurdy 1983). Traditionally this district has accounted for more than 50% of the PWS total commercial pink salmon harvest. The Eshamy and Montague Districts were also closed for the season.

## METHODS

### *Catch and Escapement Enumeration*

Salmon commercial common property, subsistence, personal use, sport, and hatchery cost recovery harvest estimates for the Copper/Bering River and Prince William Sound management areas were compiled from various sources and summarized. Estimates of escapement, indices of relative escapement abundance, and reported brood stock usage were likewise compiled and tabulated.

## **Catch**

Commercial salmon catches and fishing effort by fishing period and district or subdistrict were tabulated (Gilman et al. 1989) from sales receipts (i.e., fish tickets) supplied by fishermen and processors. Processors often estimated the number of fish sold by dividing landing weight by an estimated mean weight of fish by species. Because of the variation associated with estimates of mean weight, estimates of numbers caught may not be precise. However, because mean weight and corresponding variance were not reported on sales receipts, the estimated numbers caught were assumed to represent the actual catch.

Catches in subsistence and personal use fisheries are the sums of catches recorded on returned fishery permits as of June 1990. These catch figures are preliminary and may differ slightly from final published figures.

All sport fishery catches were estimated from postal surveys. The estimates were compared to creel census data from selected fisheries (Mills 1990).

## **Hatchery Returns**

Hatchery produced salmon were caught in commercial fisheries concurrently with wild stocks. Estimates of hatchery contributions of pink salmon to total run in 1989 were derived from coded wire tag mark-recapture data (Sharr and Peltz 1990). Hatchery fish were also harvested in hatchery cost recovery fisheries and enumerated from sales receipts. Although most of these fish are hatchery returns, some wild stock fish are undoubtedly taken in the SHA catches. Because their numbers are not known, hatchery cost recovery harvest was assumed to be all hatchery fish. Fish used for brood stock were enumerated in annual summary reports for each facility and summarized by Brady et al. (1990). A small number of carcasses from the brood stock were commercially sold in 1989 and were also summarized from fish tickets.

## **Escapements**

Salmon stocks of the Copper/Bering River and PWS areas for which escapement data were available were grouped into runs according to major spawning areas. In the Copper/Bering River area, stocks were grouped into two runs: (1) the delta/Bering run which includes all stocks of sockeye and coho salmon that spawn in coastal lakes and streams of the Copper River delta and Bering River watersheds; and (2) the upriver run which includes all stocks of sockeye and chinook salmon that spawn in the Copper River watershed upstream of Miles Lake.

The estimates of sockeye and coho salmon escapements to coastal Copper River delta and Bering River tributaries were based on peak counts obtained from periodic aerial surveys of selected spawning areas. Although aerial survey results primarily represent indices of the relative abundance of escapements

between stocks and years, they were used as estimates of total escapement in the absence of more precise data.

The upriver escapement of sockeye salmon in the Copper River was estimated using side-scanning sonar located just below the outlet of Miles Lake (Figure 2). The relative contributions of stocks which compose the total upper Copper River escapement were indexed by periodic aerial surveys. The escapement to Long Lake in the Chitina River drainage, included in the upriver sonar estimate, was directly enumerated with a weir.

For PWS, pink and chum salmon stocks in 215 index streams were enumerated from weekly aerial surveys. Sockeye salmon escapements to Coghill, Eshamy, and Jackpot Lakes were enumerated with weirs.

### *Description of Sampling Procedures*

Fish were sampled to determine their age, sex, and size. One scale was collected from each sampled sockeye, chum, and coho salmon, and three scales were collected from each sampled chinook salmon. Pink salmon were not sampled. Scales were taken from the left side of the body two rows above the lateral line in an area transected by a diagonal line from the posterior base of the dorsal fin to the anterior base of the anal fin (INPFC 1963). Scales were mounted on gum cards and impressions were made in cellulose acetate (Clutter and Whitesel 1956). Scale growth patterns were examined to determine the age of each fish sampled. Whenever marine growth zones on scales were resorbed, marine age was determined using Peterson length frequency analysis (Tesch 1970). Length in millimeters was measured from the middle of the eye to the fork of the tail. Sex was determined by inspection of morphological characteristics, or when possible, by gonadal inspection.

### *Catch Sampling*

Catches were grouped according to those which occur in the commercial fisheries of the Copper/Bering River and PWS areas and those which occur in the subsistence and personal use fisheries on the upper Copper River. Chinook salmon from two tributaries of the upper Copper River were sampled by Division of Sport Fish personnel and were the only sport catches of salmon sampled.

### **Commercial Fisheries**

Age and sex composition of the season catch for each combination of species, gear, and fishing district were estimated with stratified systematic sampling programs according to Cochran (1977). Each sampling stratum was a combination of contiguous fishing periods. Prior to the season, target dates for sampling strata were based on temporal patterns from historical catches to provide for anticipated catches of similar magnitudes for all strata. The number of strata was selected according to the rapidity of change in age

composition as estimated in previous years. Catches for which there were no valid historical estimates of age and sex composition were divided into three or four strata to expose moderate temporal changes. Whenever possible, sampling occurred on a single day near the temporal midpoint of each stratum. For the Copper River District, fish in each sample were selected systematically from processors without regard to tender vessel or subdistrict of capture because Sharr (1983) found no differences in age composition during 1982 among tender loads from subdistricts within District 212.

Sample size goals for sockeye salmon for each commercial catch stratum were 650 fish from the Copper/Bering River area and 610 fish from PWS. Sample goals for other species were 675 chinook salmon, 600 coho salmon, and 400 chum salmon per stratum. These goals were originally selected so that sufficient numbers of ageable scales would be collected to simultaneously estimate the proportion of each major age class in the catch within  $\pm 5\%$  of the true proportion 90% of the time based on the normal approximation of a binomial proportion (Goodman 1965; Cochran 1977). However, Thompson's (1987) work on the "worst case" parameter value for the multinomial distribution suggests that these goals may actually result in simultaneously estimating the true percentage of each age group within  $\pm 5\%$  over 95% of the time.

Age composition and the associated variance was estimated with procedures outlined in Cochran (1977) for stratified sampling programs as follows:

$$C_{tj} = C_t P_{tj}; \quad (2)$$

$$V[C_{tj}] = (C_t)^2 \frac{P_{tj}(1-P_{tj})}{N_t-1}; \quad (3)$$

$$C_j = \sum_{t=1}^T C_{tj}; \quad (4)$$

$$V[C_j] = \sum_{t=1}^T V[C_{tj}]; \quad (1)$$

where:

$C_t$  = the number of fish caught during stratum  $t$ ,

$P_{tj}$  = the fraction of the sample taken during stratum  $t$  that is age  $j$ ,

$N_t$  = the sample size during stratum  $t$ ,

$C_{tj}$  = the estimated number of fish of age  $j$  caught during stratum  $t$ ,

$T$  = the number of strata, and

$C_j$  = the estimate of the number of fish of age  $j$  caught during the season.

A correction factor for finite populations was not included in the calculations for variability because sample sizes were generally small relative to catches.

#### **Subsistence and Personal Use Fisheries**

A stratified systematic sampling program based on commercial catch projections by fishing period and migratory timing data for important upriver stocks (Merritt and Roberson 1983) was established for collecting sockeye salmon scale samples from the upper Copper River subsistence and personal use fisheries. Sampling stratification was modified during the course of the season due to logistical constraints. Although age compositions of fish from the two gear types, fish wheels and dip nets, were statistically different at different levels of significance for a variety of temporal combinations, the two gear types were sampled disproportionately during the season, and it was not possible to distinguish gear differences from temporal differences. For this reason, both gear types were pooled, and stratification of sampled catches was simplified to a single early stratum and a single late stratum.

The same formulae used for estimating numbers of fish by age in commercial catches were used to estimate subsistence and personal use catches by age. Age, sex, and size composition of chinook and coho salmon from upriver fisheries were not estimated due to the low number of fish harvested.

#### ***Escapement Sampling***

Sockeye salmon samples were collected from escapements to the Copper River delta/Bering River coastal drainages, as well as from escapements to the Coghill, Eshamy, and Jackpot Lakes in PWS. Methods of sample collection varied by area. For locations where sampling was temporally stratified, the age composition of the escapement was estimated using the same formulae used for the commercial catch but substituting escapement abundance for catch.



## Copper/Bering River Area

Neither comprehensive enumeration studies nor detailed stratified sampling programs are possible on all coastal salmon streams of the Copper River delta and Bering River watersheds. Consequently, aerial survey techniques and simple systematic sampling programs were used to estimate escapement by sex and age and the associated variance to these areas as follows:

$$E_j = A_m Q_j; \quad (5)$$

$$V[E_j] = (A_m)^2 \cdot \frac{Q_j(1-Q_j)}{N-1}; \quad (6)$$

where:

$E_j$  = the season escapement of fish of age  $j$ ,

$A_m$  = the peak number counted on the spawning grounds during aerial surveys,

$Q_j$  = the estimate of the portion of the escapement of age  $j$  pooled over one or two sampling trips to the spawning grounds, and

$N$  = the number of fish sampled in all sampling trips to the spawning grounds.

Because total escapement abundance to these areas was not available, peak aerial spawning ground counts were used to expand age proportions into rough estimates of numbers of fish in each age class in the escapements.

Sockeye salmon scale samples from the Copper River subsistence and personal use fisheries were assumed to also represent the age, sex, and size composition of upriver escapements because (1) these fisheries occur downstream of most major spawning tributaries of the system, and (2) the gear types used are assumed to be relatively free from size selectivity. Age and sex composition estimates from each catch stratum were applied directly to the sonar counts from Miles Lake. Temporal stratification of the sonar-estimated escapement paralleled that of the subsistence and personal use fisheries. Passage dates were lagged to account for fish travel time between Miles Lake and Chitina. Mean travel times in days were approximated from a linear regression of travel rate versus date as calculated from mark-recapture data (Merriitt and Roberson 1983).

## **Prince William Sound**

Stratified systematic sampling programs and weir counts were used to estimate the age, sex, and size composition of sockeye salmon escapements to Coghill, Eshamy, and Jackpot Lakes.

With the exception of the drift gillnet fishery in the Esther Subdistrict of the Coghill District, chum salmon harvested in PWS are taken primarily with purse seines. Because purse seines are assumed to be relatively non-selective for size and age, commercial catch samples were assumed to also represent age, sex, and size composition of escapements. Scale samples from chum salmon in the Wally H. Noerenberg Hatchery brood stock were collected by PWSAC and analyzed by division personnel. These samples provided an estimate of the age, sex, and size composition of chum salmon escapement in the Coghill District.

## **RESULTS AND DISCUSSION**

The total run of all species of salmon to the Copper/Bering River area and PWS in 1989 was estimated to be > 27,051,137 fish (Table 1). Pink salmon harvested in the commercial fisheries of PWS, 23,171,094 fish or 85.8%, composed the single largest component. Commercially harvested sockeye salmon from the Copper and Bering River Districts totaled 1,037,410 fish and were the next largest component composing 7.6% of the estimated total return of all species. Commercial catches exceeded other harvest types for all species and areas with the exception of PWS chinook salmon for which commercial harvest (1,103 fish) and sport harvest (1,093 fish) were similar. The subsistence/personal use harvest of sockeye salmon from the upper Copper River, 80,560 fish, was the largest harvest of these user groups, yet composed only 4.5% of the total catch of sockeye salmon in the Copper/Bering River area and only 0.3% of the total return of all species to all areas. The sport harvest of pink salmon in PWS totaled 37,994 fish, 54.3% of the sport harvest of all species from all areas and < 0.1% of the PWS pink salmon return.

Commercial harvests by gear type for both the Copper/Bering River area and PWS are summarized in Table 2. Purse seine catches in PWS commercial common property fisheries predominated the harvests of both pink, 13,125,073 fish, and chum, 667,563 fish, salmon. Drift gillnet fishermen in the Copper/Bering River area caught most of the commercial harvests of sockeye (1,035,148 fish), chinook (30,893 fish), and coho salmon (221,406 fish).

Personal use dip net catches (50,323 fish) and subsistence fish wheel catches (24,550 fish) of sockeye salmon in the upper Copper River accounted for 92.4% of the subsistence/personal use harvest of this species and 86.6% of all species from all areas (Table 3).

Pink salmon caught in marine waters near Valdez by sport fishermen totaled 32,879 fish and composed 86.5% of the sport harvest for this species from all areas (Table 4). Coho salmon sport catches totaled 25,649 fish, of which 18,134 were taken in the vicinity of Valdez.

Peak aerial survey counts of pink salmon escapements in PWS (Table 5) totaled 1,272,770 fish in 1989, the largest segments observed in the Eastern (359,730 fish) and Southeastern (315,000 fish) Districts. Chum salmon peak counts in the Eastern District totaled 112,080 fish and accounted for 46.1% of the total escapement of this species in PWS. Sonar counts obtained from the Miles Lake facility totaled 607,797 fish. Although species composition is not estimated for these sonar counts, sockeye salmon are the most numerous species present; hence, counts are considered to be entirely sockeye salmon. Aerial survey estimates of chinook salmon from the upper Copper River area totaled 4,367 fish. Although aerial survey counts of coho, pink, and chum salmon were not reported, aerial observations indicated escapements for these species were small.

Appendices A and B present age and sex composition by species for all sampled strata of the Copper/Bering River area commercial, subsistence, personal use and sport catches, as well as daily catches for upriver subsistence and personal use catches. Escapement aerial survey counts, daily Miles Lake sonar and Long Lake weir counts, as well as age and sex composition of escapements by location, are presented in Appendices C and D. Appendix E contains age and sex composition of PWS commercial harvests for each sampled district and time stratum. Aerial escapement estimates, daily weir counts, and age and sex composition of PWS escapements are presented in Appendix F. Mean length by age and sex for all fish sampled can be found in Appendix G, and average weights of commercially caught fish are in Appendix H.

### *Copper/Bering Rivers*

The commercial, subsistence, personal use, and sport fisheries in the Copper River District (212) and the Bering River District (200) share geographic proximity, occur simultaneously, and are all directed at stocks of sockeye, coho, and chinook salmon returning to the Copper/Bering River area.

#### **Sockeye Salmon**

*Catch.* In the Copper River District 1,025,923 sockeye salmon were commercially harvested in 1989 (Table 6). Sockeye catches peaked during the second opening on 18 and 19 May (152,843 fish) and again during the fourth opening between 25 and 27 May (151,393 fish). Catches dropped sharply during the month of June, increased slightly from early July to mid-July, then declined steadily for the remainder of the season (Figure 4).

The age composition of the season total catch for combined sampled strata combined was 75.8% age 1.3, 12.1% age 2.3, 5.5% age 1.2, 4.7% age 0.3, and 1.9% other ages (Table 7). The percentage of age-1.3 fish was temporally bimodal with peak abundances of 81.0% in late May and 83.7% in mid-June (Figure 5, Appendix A.1). Low values of 69.4% were recorded in early June and 65.6% in mid-July. The percentage of the catch aged 2.3 was also variable through the season ranging from a high of 16.7% in early June to a low of 3.9% in late June. Age-0.3 fish declined from a high of 8.2% for the first sample in mid-May to 1.3% in early June and remained relatively low through the rest of the season. Conversely,

fish aged 1.2 composed only 0.2% of the catch in mid-May but increased steadily to a high of 15.6% in late July.

The Bering River District sockeye fishery was opened on 19 June, 1 month later than the Copper River District (Table 6). As in most recent years, fishing was concentrated over a relatively short period and substantial catches were reported for only two fishery openings (Figure 4). Total sockeye salmon harvest for the district was 9,225 fish including small incidental catches during the directed coho salmon fishery. The sampled catch was composed of 68.8% age-1.3, 17.2% age-1.2, 9.1% age-2.3, and 4.9% other age fish (Table 7, Appendix A.2).

The subsistence and personal use sockeye fisheries on the upper Copper River began on 1 June, and totaled 80,221 fish (Appendix B.1). Peak daily catches occurred in early June and late July (Figure 6). Of the total, 34.6% were taken with fish wheels and 65.4% with dip nets. Fish aged 1.3 (62.6%) and 2.3 (2.8%) were lower in relative abundance than in the commercial catch (Table 7). Age-1.2 fish (31.5%) composed a much larger portion than in the commercial catch. The contribution of age-1.3 fish declined from 78.7% during June and the first half of July to 42.7% in late July (Appendix B.2). The contribution of fish aged 1.2 increased from 13.0% to 54.3% during the same intervals.

Of the 4,509 sockeye salmon harvested by sport fishermen in the upper Copper River, 96.4% were caught in the Gulkana and Klutina River drainages (Table 4). The 1989 sport harvest of sockeye salmon in coastal areas of the Copper River District was included in catches reported for PWS. Observations of local area biologists indicated that several hundred fish were probably caught in a few easily accessible streams near Cordova.

*Escapement.* Aerial surveys indicated 51,700 sockeye salmon escaped into spawning areas of the Copper River Delta and 23,300 into the Bering River drainage (Table 5, Appendix C.1). Although aerial surveys do not represent actual escapements, they are used as an index of their relative importance. Fish aged 1.3 composed 63.4% of escapements to the upper Copper River and 71.1% of escapements to the Bering River area (Table 8). Age-1.3 fish were the most abundant age group overall in Copper River Delta escapements (36.9%) and were similar in abundance to age-1.2 fish (34.7%) for this run (Figure 7). Fish aged 1.2 composed 30.5% of the upper Copper River escapement, but only 11.6% of the Bering River run. Age-2.3 fish contributed 12.1% of the Bering River escapement and 8.4% of the Copper River delta escapement. The age-2.3 contribution to the upper Copper River was 2.9%.

An estimated 607,797 salmon passed the Miles Lake sonar site in 1989 (Table 5, Figure 7). Included in this count are 4,367 chinook salmon observed in aerial surveys. Escapement occurred from late May to early August (Figure 8). Peak daily counts of 8,000–14,000 fish occurred in late May, early June, and mid-July (Appendix D.1). Estimated age composition of the escapement past Miles Lake (Figures 7 and 8, Appendix D.4) was based on samples collected from upriver subsistence and personal use fisheries (Table 7).

## **Chinook Salmon**

*Catch.* Most of the 30,863 chinook salmon caught in the Copper River District in 1989 were harvested between 15 May and 16 June (Table 9). Percent age composition of the total commercial catch was 61.7% age 1.4, 24.5% age 1.3, 2.9% age 2.4, and 10.9% other age groups (Table 10). Fish aged 1.4 were most numerous in the catch throughout the season (Figure 9, Appendix A.3).

A total of 2,904 chinook salmon were caught in the upper Copper River subsistence and personal use fisheries (Table 3). Most of these chinook salmon (75.7%) were captured using dip nets, and the remainder were taken by fish wheels. No information is available on the age composition of the chinook salmon subsistence or personal use harvests.

Mills (1990) estimated a sport harvest of 2,356 chinook salmon from the upper Copper River drainage (Table 4). Virtually all of these fish were caught in the Gulkana and Klutina River drainages. The age composition of samples from those catches (Table 10, Appendix B.3) were predominantly age 1.4, 66.7% for the Gulkana River and 69.3% for the Klutina River. Age-1.3 fish composed 27.0% of the Gulkana and 26.7% of the Klutina River harvests.

*Escapement.* Aerial surveys of the 1989 chinook salmon escapement (4,367 fish) in the upper Copper River (Appendix D.3) indicate that the observed escapement was well above average for this area. The escapement estimate for selected index streams was 3,657 fish compared to the 1979–88 average index of 2,873 (Brady et al. 1990).

## **Coho Salmon**

Substantial catches of coho salmon in the Copper River District began in early August and continued until the season closure in late September (Table 11, Figure 10). Of the 194,454 coho salmon caught in the Copper River District, 51.8% were age 1.1 and 47.5% were age 2.1 (Table 12). A slight shift in the age composition was observed during the season (Appendix A.4). Age-2.1 fish were slightly more abundant in early August (54.0%), whereas age-1.1 fish were increasingly more abundant thereafter (52.1% in late August and 55.4% in early September).

The 1989 Bering River District coho salmon catch of 26,952 fish occurred almost exclusively in the Katalla and Controller Bay areas (Table 11, Figure 10). Age-2.1 fish composed a slightly greater portion of the Bering River catch (59.8%) than of the Copper River commercial catch (Appendix A.5). There was little change in the age composition over time for this district (Figure 11).

ADF&G estimated a subsistence and personal use catch of 941 coho salmon in the Copper/Bering River area (Table 3). Sport fishermen harvested 2,100 coho salmon from Eyak River and an unknown number from a few easily accessible coastal streams on the Copper River delta (Table 4). No age or sex composition data are available for these fisheries.

No aerial escapement estimates were made for coho salmon in the upper Copper River drainage in 1989. Traditionally, aerial survey counts of coho salmon escapements to the upper Copper River are quite low.

Aerial survey data (Appendix C.2) provided escapement estimates of 41,366 fish to the Copper River delta and 15,835 fish to the Bering River drainage (Table 5). Although aerial surveys do not represent actual escapements, they are used as an index of their relative importance. No age or sex composition data are available for these escapements.

### *Prince William Sound*

Fisheries in the nine fishing districts in PWS (Districts 221-229) share geographic proximity, occur simultaneously, and are directed at salmon stocks of PWS origin. Chinook salmon are incidental in PWS catches and are not discussed in the text.

#### **Sockeye Salmon**

A total of 137,401 sockeye salmon were commercially harvested in PWS in 1989 (Table 2). The drift gillnet catch of 127,526 sockeye salmon included 106,114 fish from the Coghill District and 21,412 fish from the Unakwik District. The Eshamy District was closed for the entire season due to the possibility of contamination of catches by oil from the Exxon Valdez accident.

The largest sockeye catches in the Unakwik and Coghill Districts occurred during the last two weeks of June and the first week of July (Table 13, Figure 12). Fish aged 1.3 composed 91.9% of the catch in the Unakwik and 94.8% in the Coghill Districts (Table 14). The age composition of sockeye salmon from the Coghill District varied little throughout the season (Figure 13, Appendix E.2).

The largest weekly purse seine catch of sockeye salmon (4,238 fish) in PWS occurred in late July and accounted for 43.0% of the total harvest of 9,851 fish (Table 13). Approximately 73.8% of the sockeye salmon purse seine harvest occurred in the Northern (42.0%) and Eastern (31.8%) Districts.

The reported subsistence catch of sockeye salmon in PWS was 429 fish (Table 3). Age and sex composition data were not available for these small harvests.

An estimated 3,939 sockeye salmon were caught in the PWS area sport fishery (Table 4). Because of the way in which sport harvests are summarized and reported by Sport Fish Division, this estimate also includes an estimated several hundred fish taken from a number of drainage systems generally included in Copper River delta/Bering River area summaries by Commercial Fisheries Division.

A total of 37,751 sockeye salmon were counted through the Coghill weir in 1989 (Figure 14, Appendix F.1). Approximately 60.6% of the escapement passed the weir in 6 d from 10 July through 15 July. Peak daily counts of 5,783 fish were recorded on 11 July and 5,534 on 13 July. The escapement age

composition through the weir was estimated as 82.4% age 1.3 and 10.1% age 2.3, and the remaining 7.5% primarily age 2.2 (Table 15). The contribution of age-1.3 fish remained high throughout the season, ranging from 71.2% in late June to 84.9% for the second and 82.8% for the third sampling strata in early July and mid-July (Figure 14, Appendix F.7).

The escapement through Eshamy weir of 58,127 sockeye salmon (Appendix F.2) occurred later and was more prolonged than the escapement at Coghill weir (Figure 15). The age composition of the escapement was 78.8% fish aged 1.2 and 12.8% fish aged 2.2. The percentage of age-1.2 fish increased steadily from 69.6% in mid-July to 92.9% in late August (Figure 15, Appendix F.8) as contributions of other age groups declined.

A weir was installed on the Jackpot Lake outlet stream for the first time in 1989 in response to the need to assess impacts of the Exxon Valdez oil spill. Although the weir was installed after the spawning migration was already underway, a total of 2,983 fish were counted past the weir. Peak daily counts of 799 fish were observed on 5 July and 465 on 25 July (Appendix F.3). Daily passage rates were too low to stratify age sampling, and samples were collected over the course of the season (Appendix F.9). Age composition was similar to that of Coghill weir sockeye samples, i.e. ages 1.3 (82.6%) and 2.3 (6.9%) were the most abundant.

Other sockeye salmon runs in PWS are much smaller by comparison, and escapement information is provided by aerial surveillance (Appendix F.4).

### **Coho Salmon**

In 1989, 69,428 coho salmon were harvested by commercial purse seine and 80,764 by commercial gillnet fisheries in PWS (Table 2). The largest purse seine catches occurred in the Coghill (56.9%) and Eastern (30.1%) Districts. With the exception of 27 fish reported taken in the Unakwik District, nearly all coho salmon taken with gillnets in PWS were harvested by drift gillnet fishermen in the Coghill District. The majority of those fish probably originated from the Wally H. Noerenberg Hatchery (L.R. Peltz, Alaska Department of Fish and Game, Cordova, personal communication). Coho catches peaked in late August and early September (Table 16). Age-1.1 fish (92.2%) were the most abundant age group in Coghill District catches (Table 17), increasing from 85.2% in mid-August to 99.3% in early September.

The subsistence catch of coho salmon in PWS was small, totalling only 628 fish (Table 3).

In recent years the sport fishery in PWS has increasingly targeted on coho salmon. Mills (1990) estimated that 25,631 coho salmon were caught by sport fishermen in PWS and drainages of the Copper River delta and Bering River (Table 4). A portion of this catch can probably be attributed to successful returns of hatchery-reared coho salmon released at Whittier, Valdez, and Cordova in 1988 (Holland 1989). Holland (1990) estimated that sport fishermen harvested over 4,000 coho salmon in PWS that originated from FRED Division smolt releases.

In addition to enhancement of commercial common property and sport harvests, coho salmon hatchery runs also contributed a total of 52,307 fish to the hatchery cost recovery harvest at the Solomon Gulch Hatchery (Table 2).

### **Chum Salmon**

Of the 995,887 chum salmon commercially harvested by all users in PWS, 667,563 (67.0%) were caught by purse seine fishermen and 194,988 (19.6%) by drift gillnet fishermen (Table 2). The majority of the purse seine catch came from the Eastern District (51.1%), and most of the remainder was taken in the Northern (28.9%) and Coghill (18.7%) Districts (Table 18). Peak catches occurred in the Eastern District from early to late July (Figure 16). In the Northern District large catches were sporadic, and peak weekly catches occurred in late June, late July, and mid-August. Gillnet harvest of chum salmon in the Coghill District was greatest in late June and generally declined through the season. Purse seine harvests peaked about mid-August. Nearly all of the PWS gillnet chum salmon catch occurred in the Coghill District (Table 18). Fishermen in the district primarily targeted fish returning to the Wally H. Noerenberg Hatchery on Esther Island.

Age-0.3 chum salmon were the largest age group for all commercial purse seine (74.8%) and gillnet (76.2%) catch samples (Table 19). The remainder were primarily age-0.4 fish, 19.5% for both gear types combined. In all sampled districts there were temporal increases in the abundance of age-0.3 fish and corresponding decreases in age-0.4 fish (Figure 17, Appendices E.3-E.5).

Hatchery cost recovery harvests accounted for 129,525 chum salmon (13.0%) of the total commercial harvest of this species in 1989 (Table 2). The special Main Bay hatchery cost recovery harvest peaked in early July (Figure 16) and accounted for 79.4% of the total cost recovery sales. Age-0.4 fish predominated in this catch in late June (67.1%) but declined to 30.2% of the catch by late July (Figure 17, Appendix E.6). In contrast, age-0.3 fish increased from 26.1% of the catch to 63.0% over the same period.

Preliminary estimates from coded wire tag mark-recapture data (Brady et al. 1990) indicate that approximately 199,611 fish (23.0%) of the chum salmon commercial harvest originated from hatcheries (Table 20). The estimated hatchery cost recovery harvest from all facilities and the estimated commercial common property harvest of hatchery-produced chum salmon was 330,973 fish, and composed 33.2% of the total commercial harvest of this species in PWS.

Subsistence harvest of chum salmon in PWS was very low, and was estimated to be less than 400 fish. The estimated total sport fishery catch of 3,635 chum salmon for the area (Table 4) occurred primarily in salt water near Valdez.



## **Pink Salmon**

Of the 1989 PWS total commercial harvest of 21,860,330 pink salmon, 13,125,073 fish (60.0%) were taken by purse seine fishermen and 670,342 fish (3.3%) were taken by gillnet fishermen in commercial common property harvests. Of the commercial common property harvest, 46.6% were taken with purse seines in the Northern District, 23.9% with purse seines in the Coghill District, and 22.8% with purse seines in the Eastern District (Table 21, Figure 18). Peak catches for these fisheries occurred in mid-July in the Eastern District, late July in the Southeastern District, mid-August in the Northern District, and mid- to late August in the Coghill District, and late August in the Northwestern District (Figure 19).

Of the total commercial catch, 36.7% was taken for hatchery cost recovery. Preliminary estimates from coded wire tag recoveries indicate that approximately 12,368,007 pink salmon from the commercial common property harvest originated from hatcheries (Table 22). The total commercial harvest of hatchery-produced pink salmon in PWS was estimated at 21,393,797 fish or 97.9%.

Subsistence harvest of pink salmon was very low and was estimated to be less than 400 fish. An estimated 37,994 pink salmon were caught by sport fishermen (Table 4), and most were taken in marine waters near Valdez and Whittier.

Estimated escapements of wild stock pink salmon in PWS during 1989 (Figure 18, Appendix F.5) were below anticipated levels in all districts that were open to commercial fishing (Brady et al. 1990). Aerial escapement estimates for districts that were closed to fishing were generally slightly above anticipated levels.

## LITERATURE CITED

- ADF&G (Alaska Department of Fish and Game). 1962. Cordova area annual report, 1962. Alaska Department of Fish and Game, Division of Commercial Fisheries, Region 2 Report (unpublished), Cordova.
- ADF&G (Alaska Department of Fish and Game). 1964. Cordova area annual report, 1964. Alaska Department of Fish and Game, Division of Commercial Fisheries, Region 2 Report (unpublished), Cordova.
- Brady, J.A., S.P. Morstad, E. Simpson, and E. Biggs. 1990. Prince William Sound Annual Finfish Management Report, 1989. Alaska Department of Fish and Game, Commercial Fisheries Division, Regional Information Report 2C90-07, Anchorage.
- Clutter, R., and L. Whitesel. 1956. Collection and interpretation of sockeye salmon scales. Bulletin of the International Pacific Salmon Fisheries Commission 9, Vancouver, British Columbia.
- Cochran, W. 1977. Sampling techniques, 3rd edition. John Wiley & Sons, Inc. New York.
- Crawford, D.L., and E.M. Simpson. 1989. Catch and escapement statistics for Copper River, Bering River, and Prince William Sound salmon, 1987. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 89-17, Juneau.
- Crawford, D.L., and E.M. Simpson. 1991. Catch and escapement statistics for Copper River, Bering River, and Prince William Sound salmon, 1988. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 90-06, Juneau.
- Gilman, L., J. Phillips, and K.C. Schultz. 1989. Commercial salmon catch statistics for the Prince William Sound management area, 1989. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2C89-09, Anchorage.
- Goodman, L. 1965. On simultaneous confidence intervals for multinomial populations. *Technometrics* 7:247-254.
- Holland, J.S., editor. 1989. FRED 1988 annual report to the Alaska State Legislature. Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement and Development, Juneau.
- Holland, J.S., editor. 1990. FRED 1989 annual report to the Alaska State Legislature. Alaska Department of Fish and Game, Division of Fisheries Rehabilitation, Enhancement and Development, Juneau.
- INPFC (International North Pacific Fisheries Commission). 1963. Annual Report for 1961. Vancouver, British Columbia.
- McCurdy, M. 1983. Prince William Sound salmon tagging research, 1981. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 81, Juneau.

#### LITERATURE CITED (Continued)

- Merritt, M., and K. Roberson. 1983. Migratory timing of upper Copper River sockeye salmon (*Oncorhynchus nerka*) stocks, and its management implications to the commercial fishery. Alaska Department of Fish and Game, Division of Commercial Fisheries, Informational Leaflet 225, Juneau.
- Mills, M. 1990. Alaska statewide sport fish harvest report, 1989. Alaska Department of Fish and Game, Division of Sport Fish, Fishery Data Series 90-44, Juneau.
- Sharr, S. 1983. Catch and escapement statistics for Copper and Bering River sockeye (*Oncorhynchus nerka*), chinook (*O. tshawytscha*), and coho salmon (*O. kisutch*), 1982. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 98, Juneau.
- Sharr, S., and C. Peckham. 1988. Catch and escapement statistics for Copper River, Bering River, and Prince William Sound salmon, 1985. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fisheries Report 88-16, Juneau.
- Sharr, S., C. Peckham, and G. Carpenter. 1988. Catch and escapement statistics for Copper River, Bering River, and Prince William Sound salmon, 1986. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fisheries Report 88-17, Juneau.
- Tesch, F. 1970. Age and growth. Pages 98–126 in W. E. Ricker, editor. Methods for assessment of fish production in fresh waters. IBP Handbook No. 3, Blackwell Scientific Publications, Oxford, Great Britain.
- Thompson, S.H. 1964. The red salmon (*Oncorhynchus nerka*) of Copper River, Alaska. United States Department of the Interior, Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory. Manuscript Report 64-12, Auke Bay.
- Thompson, S. 1987. Sample size for estimating multinomial proportions. The American Statistician 41:42–46.

Table 1. Salmon harvest and indexed escapement by species and fishery from the Copper/Bering River and Prince William Sound areas, 1989.

Area and Fishery Element	Catch by Species (No. of Fish)				
	Sockeye	Chinook	Coho	Chum	Pink
<b>Copper/Bering River Area</b>					
Total Commercial Catch	1,037,410	30,903	222,366	5,896	26,136
Subsistence/Personal Use Catch	80,560	2,960	941	<sup>b</sup>	<sup>b</sup>
Sport Catch <sup>a</sup>	4,712	2,356	2,118	0	0
Indexed Escapement	682,797	4,367	57,201		
Copper/Bering River Total	1,805,479	40,586	282,626	5,896	26,136
<b>Prince William Sound Area</b>					
Total Commercial Catch	137,828	1,103	202,614	995,887	21,860,330
Subsistence/Personal Use Catch	429	0	628	<sup>c</sup>	<sup>c</sup>
Sport Catch <sup>a</sup>	3,736	1,093	23,531	3,635	37,994
Indexed Escapement	105,221	43	262	243,310	1,272,770
Prince William Sound Total	247,214	2,239	227,035	1,242,832	23,171,094
<b>Total All Areas</b>	<b>2,052,693</b>	<b>42,825</b>	<b>509,661</b>	<b>1,248,728</b>	<b>23,197,230</b>

<sup>a</sup> Some minor sport harvests of anadromous salmon are not reported by specific locations. Consequently, upper Copper River estimates may include a small number of fish from Susitna River tributaries, and Prince William Sound estimates may include a small number of fish from Copper River delta/Bering River coastal streams.

<sup>b</sup> A total of 149 fish of other species including salmon, trout, and whitefish were reported caught but species composition was not estimated.

<sup>c</sup> A total of 768 fish of other species were reported caught and were estimated to be composed of approximately half pink and half chum salmon.

Table 2. Commercial salmon harvest by species, gear type and district from the Copper/Bering River and Prince William Sound areas, 1989.

Area/Gear	District or Hatchery Name	Location Code	Catch by Species (No. of Fish)				
			Sockeye	Chinook	Coho	Chum	Pink
Copper/Bering River Area							
Drift Gillnet	Copper River	212	1,025,923	30,863	194,454	5,845	25,877
	Bering River	200	9,225	30	26,952	2	7
	Total		1,035,148	30,893	221,406	5,847	25,884
Educational Permit <sup>a</sup>	Copper/Bering	200/212	2,262	10	960	49	252
Copper/Bering River Total			1,037,410	30,903	222,366	5,896	26,136
Prince William Sound Area							
Drift Gillnet	Coghill	223	106,114	364	80,737	194,584	628,522
	Eshamy <sup>b</sup>	225	0	0	0	0	0
	Unakwik	229	21,412	31	27	404	41,820
	Total		127,526	395	80,764	194,988	670,342
Set Gillnet	Eshamy <sup>b</sup>	225	0	0	0	0	0
	Total		0	0	0	0	0
Purse Seine	Eastern	221	3,135	528	20,894	341,142	3,151,096
	Northern	222	4,134	83	7,044	193,155	6,422,270
	Coghill	223	2,030	61	39,484	124,639	3,296,965
	Northwest	224	406	2	1,684	7,862	181,565
	Southwest	226	0	0	0	0	0
	Montague	227	0	0	0	0	0
	Southeast	228	146	5	322	765	73,177
	Unakwik	229	0	0	0	0	0
	Total		9,851	679	69,428	667,563	13,125,073
Hatchery Cost Recovery Harvest <sup>c</sup>	Solomon Gulch	221-61	11	9	52,307	1,658	873,002
	Cannery Creek	222-21	0	0	0	0	631,284
	Wallace H. Noerenberg	223-41	0	0	0	16,172	2,786,348
	Armin F. Koernig	226-62	0	0	0	8,884	3,715,739
	Main Bay <sup>d</sup>	225-21	13	0	0	102,811	0
Total		24	9	52,307	129,525	8,006,373	
Educational Permit <sup>a</sup>	Eastern	221	60	1	5	554	29,732
	Coghill	223	0	0	79	386	16,347
	Total		60	1	84	940	46,079
Oil Contaminated ADF&G Test Fish Confiscated			57	0	22	777	9,181
			170	19	9	1,932	3,090
			140	0	0	162	192
	Total		367	19	31	2,871	12,463
Prince William Sound Total			137,828	1,103	202,614	995,887	21,860,330
Total All Areas and Gear Types			1,175,238	32,006	424,980	1,001,783	21,886,466

<sup>a</sup> Cordova High School educational special permit.

<sup>b</sup> Closed to commercial fishing due to possibility of contamination from Exxon Valdez oil spill.

<sup>c</sup> Harvest is from purse seines.

<sup>d</sup> Although owned and operated by FRED Division, oil contamination in Main Bay precluded an orderly common property fishery and a one-time agreement was reached with PWSAC to allow them to harvest returning chum salmon in the bay as a hatchery cost recovery harvest in 1989.

Table 3. Subsistence and personal use harvest by species, fishery, and gear type for the Copper/Bering River and Prince William Sound areas, 1989. Data are preliminary and based on incomplete permit returns.

Area/Fishery	Gear	Location	Catch by Species (No. of Fish)			
			Sockeye	Chinook	Coho	Other <sup>a</sup>
Copper/Bering River Area						
Personal Use	Dip Net	Upper Copper River	50,323	2,130	814	54
	Fish Wheel	Upper Copper River	3,182	30	11	0
	Total		53,505	2,160	825	54
Subsistence	Dip Net	Upper Copper River	2,166	68	1	0
	Fish Wheel	Upper Copper River	24,550	676	64	87
	Drift Gillnet	Copper River Delta/Bering River	339	56	51	8
	Total		27,055	800	116	95
Copper/Bering River Total			80,560	2,960	941	149
Prince William Sound						
Subsistence	Drift Gillnet	Prince William Sound General	0	0	0	3
	Mixed Gear <sup>b</sup>	Tatitlek	107	0	628	31 <sup>c</sup>
		Southwestern (Chenega)	322	0	0	734 <sup>c</sup>
Prince William Sound Total			429	0	628	768
Total All Areas			80,989	2,960	1,569	917

<sup>a</sup> Includes steelhead, char, whitefish, other salmon, and miscellaneous species.

<sup>b</sup> Special subsistence harvest initiated in 1989.

<sup>c</sup> Other species composition estimated to be half pink salmon and half chum salmon.

Table 4. Sport fishery harvest and effort by location and species in the upper Copper River and in the Copper River Delta, Bering River, and Prince William Sound areas combined, 1989.

Area	Location/Fishery	Anglers	Trips	Days Fished	Sport Fish Harvest by Species				
					Sockeye	Chinook	Coho	Chum	Pink
Upper Copper River <sup>a</sup>	Gulkana River								
	Float – Paxson to Sourdough	2,429	1,547	3,358	598	362	0	0	0
	Float – Sourdough to Highway	1,903	1,547	2,701	222	419	0	0	0
	Other	5,446	7,162	9,226	1,836	849	0	0	0
	Klutina River								
	Boat	1,485	1,516	1,485	495	272	0	0	0
	Bank	3,357	3,311	4,568	888	380	0	0	0
	Other Streams	2,748	3,710	5,182	145	34	18	0	0
	Paxson Lake	3,589	3,898	4,099	34	0	0	0	0
	Summit Lake (near Paxson)	2,336	2,181	2,936	273	0	0	0	0
	Other Lakes	3,599	3,718	6,745	18	40	0	0	0
Area Total		24,489 <sup>b,c</sup>	28,590	40,300	4,509	2,356	18	0	0
Copper River Delta Bering River and Prince William Sound	FRESHWATER:								
	Eyak River	1,228	4,163	7,347	203	0	2,100	0	137
	Coghill River	415	415	415	344	0	9	0	86
	Other Streams	2,029	3,927	6,012	767	0	2,213	73	971
	Other Lakes	1,070	1,277	1,402	18	0	9	0	111
	Subtotal	3,796 <sup>c</sup>	9,782	15,176	1,332	0	4,331	73	1,305
	SALTWATER:								
	Valdez Bay								
	Boat	10,336	17,417	28,985	326	374	13,868	1,497	14,740
	Shoreline	2,154	4,035	3,746	238	117	1,409	257	2,369
	Shoreline/Road System	8,278	11,229	15,740	264	35	2,857	964	15,770
	Passage Canal – Boat	2,408	3,318	6,592	352	70	587	147	918
	Orca Inlet								
	Boat	510	1,579	2,468	53	0	180	0	172
	Shoreline	447	1,340	1,929	0	0	596	64	240
	Other								
	Boat	3,562	8,922	15,437	1,321	380	953	596	1,983
	Shoreline	1,326	2,155	5,222	53	117	850	37	497
	Subtotal	24,069 <sup>c</sup>	49,995	80,119	2,607	1,093	21,300	3,562	36,689
Area Total		26,238 <sup>c</sup>	59,777	95,295	3,939	1,093	25,631	3,635	37,994
Total All Areas		50,727 <sup>c</sup>	88,367	135,595	8,448	3,449	25,649	3,635	37,994

<sup>a</sup> Includes drainages of the Copper River upstream from a line between the south bank of Haley Creek and the south bank of Canyon Creek in Wood Canyon.

<sup>b</sup> Maximum estimate. Includes some fishermen who may have fished only in waters of the upper Susitna River drainage.

<sup>c</sup> Angler totals may not equal sum of sites due to some anglers fishing at more than one site.

Table 5. Salmon escapements and escapement indices by species and district in the Copper/Bering River and Prince William Sound areas, 1989.

Area and District	Statistical Area	Escapement by Species				
		Sockeye	Chinook	Coho	Chum	Pink
Copper/Bering River Area						
Copper River – Copper River Delta <sup>a</sup> Upper Copper River	212	51,700 607,797 <sup>b</sup>	0 4,367 <sup>a</sup>	41,366	0	0
Bering River <sup>a</sup>	200	23,300	0	15,835	0	0
Area Total		682,797	4,367	57,201	0	0
Prince William Sound Area <sup>c</sup>						
Eastern	221				112,080	359,730
Northern	222	2,500 <sup>d</sup>			46,470	106,530
Coghill	223	38,751 <sup>e</sup>	34 <sup>f</sup>		22,680	45,510
Northwestern	224	1,260 <sup>d</sup>			27,430	68,540
Eshamy	225	58,127 <sup>f</sup>	1 <sup>f</sup>		320	19,470
Southwestern	226	4,583 <sup>e</sup>	8 <sup>f</sup>	262 <sup>f</sup>	11,690	176,230
Montague	227				0	181,760
Southeastern	228				22,640	315,000
Area Total		105,221	43	262	243,310	1,272,770

<sup>a</sup> Based on periodic aerial surveys of salmon streams (Appendices C.1–2 and D.3).

<sup>b</sup> Miles Lake sonar count (Appendix D.1). Species composition not estimated. However, sockeye salmon are by far the most numerically abundant species, and counts for all species are included in the sonar escapement estimate. Aerial surveys indicated coho, pink, and chum salmon escapements to the upper Copper River to be very small. The aerial survey counts of sockeye salmon totaled 110,821 fish.

<sup>c</sup> Escapement estimate for pink and chum salmon in Prince William Sound are based on aerial counts of regularly surveyed streams adjusted for stream life. Escapements of other salmon species are generally insignificant and are not recorded except as noted.

<sup>d</sup> Based on peak observed aerial count during regularly scheduled surveys.

<sup>e</sup> Based on weir counts plus peak observed aerial counts of other district streams in scheduled surveys.

<sup>f</sup> Weir count.



Table 6. Copper/Bering River management area sockeye salmon commercial common property catch and effort by district and fishing period from final fish ticket summaries, 1989.

Week	Fishing			Copper River		Bering River	
	Period	Dates	Hours	Effort <sup>a</sup>	Catch	Effort <sup>a</sup>	Catch
21	1 <sup>b</sup>	05/15–05/16	24	301	48,157	Closed	
22	2 <sup>b</sup>	05/18–05/19	24	358	152,843	Closed	
22	3	05/22–05/23	24	392	110,911	Closed	
23	4	05/25–05/27	36	408	151,393	Closed	
23	5	05/29–05/30	36	406	108,891	Closed	
24	6	06/01–06/02	24	333	38,546	Closed	
25	7	06/05–06/06	24	395	89,062	Closed	
25	8	06/08–06/09	24	370	30,430	Closed	
26	9	06/12–06/13	24	336	49,086	Closed	
26	10	06/15–06/16	24	246	37,589	Closed	
27	11	06/19–06/20	24	171	34,228	14	7,479
27	12	06/22–06/23	24	209	29,535	13	1,708
28	13	06/26–06/27	24	102	21,528	0	0
28	14	07/03–07/04	24	124	25,525	0	0
29	15	07/10–07/11	24	228	35,830	0	0
29	16	07/17–07/18	24	223	32,801	0	0
30	17	07/24–07/26	48	163	16,213	0	0
30	18	07/31–08/02	48	89	6,613	0	0
31	19	08/07–08/09	48	182	4,630	2	9
31	20	08/14–08/16	48	143	1,616	3	2
32	21	08/21–08/23	48	165	440	10	17
32	22	08/31–09/02	48	132	42	10	10
33	23	09/11–09/13	48	134	12	15	0
34	24	09/21–09/23	48	78	2	8	0
35 <sup>c</sup>	25	09/28–09/30	48	45	0	2	0
TOTAL				476	1,025,923	40	9,225

<sup>a</sup> Number of permits reporting catches.

<sup>b</sup> From 1900 hours May 18 until 0001 hours August 01 only drift gillnets with a mesh size smaller than 6 in were allowed.

<sup>c</sup> All waters of Little Softuk were closed north of the entrance to Little Softuk at 60 12.9 N. Latitude.

Table 7. Estimated age composition of Copper/Bering River area sockeye salmon in commercial common property drift gillnet catches and upper Copper River subsistence and personal use fish wheel and dip net catches, 1989.

Fishery	District	Sample Size	Total Catch	Percentage of Catch by Brood Year and Age Group											
				1987		1986		1985			1984		1983		1982
				0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	2.4
Commercial Common Property	Copper River	4,684	1,025,923	0	0.6	0.1	4.7	5.5	0	0.1	75.8	0.9	0.2	12.1	0.1
	Bering River	593	9,225	0	2.7	0.5	0.7	17.2	0	0	68.8	1.0	0	9.1	0
Subsistence/ Personal Use	Upper Copper River	1,706	80,221	0.1	0.2	1.0	0.7	31.5	0	0	62.6	1.0	0.1	2.8	0

Table 8. Estimated age composition of sockeye salmon in escapements to the Copper and Bering River systems, 1989.

		Percentage of Escapement by Brood Year and Age Group														
Drainage System	Location	Sample Size	Escapement Estimate	1987	1986		1985			1984			1983			1982
				0.1	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	3.3
Copper River																
Upper Copper River	Miles Lake Sonar	*	607,797	0.1	0.2	1.0	0.7	30.5	0.0	63.4	1.0	0.0	0.1	2.9	0.0	0.0
Copper River Delta	Eyak Lake -- South Beaches	421	1,430	0.5	5.3	1.3	15.8	23.4	0.2	47.6	1.4	0.0	0.0	4.6	0.0	0.0
	Eyak Lake -- Middle Arm	549	2,500	0.0	0.9	0.9	2.7	19.5	0.5	59.4	1.8	0.0	0.0	14.2	0.0	0.0
	Mckinley Lake	613	6,930	0.2	5.2	2.3	1.5	41.8	0.2	39.8	2.9	0.0	0.0	6.2	0.0	0.0
	27 Mile Creek	523	3,020	0.0	18.7	1.7	9.9	37.9	0.2	27.2	2.3	0.0	0.0	2.1	0.0	0.0
	39 Mile Creek	540	7,420	0.0	1.7	0.9	3.7	19.6	0.7	54.1	5.4	0.0	0.0	13.9	0.0	0.0
	Pleasant Creek	417	990	0.0	2.6	0.2	14.1	19.4	0.2	61.2	1.4	0.0	0.0	0.7	0.0	0.0
	Ragged Point River	576	4,420	0.2	21.9	2.6	7.1	27.8	0.2	30.9	1.6	0.0	0.0	7.8	0.0	0.0
	Martin Lake	566	7,850	0.0	6.5	4.2	2.8	37.6	1.1	28.8	7.1	0.0	0.0	11.8	0.0	0.0
	Little Martin Lake	537	3,030	0.0	0.2	14.7	0.0	31.1	11.2	14.3	12.5	0.2	0.0	15.5	0.4	0.0
	Tokun Lake	597	4,950	0.0	0.0	0.0	0.5	56.4	0.0	40.9	0.7	0.0	0.0	1.5	0.0	0.0
	Martin River Slough	696	3,010	0.0	28.6	0.1	4.6	46.0	0.1	12.5	5.6	0.0	0.0	2.3	0.1	0.0
TOTAL		6,035	45,550	0.1	7.7	2.7	4.0	34.7	1.2	36.9	4.3	0.0	0.0	8.4	0.0	0.0
Bering River	Bering Lake	590	14,330	0.0	2.0	1.4	0.8	12.0	0.0	74.2	0.8	0.0	0.0	8.5	0.0	0.2
	Kushtaka Lake	757	1,530	0.0	0.1	0.0	0.0	7.5	0.1	41.9	4.1	0.0	0.0	46.2	0.0	0.0
	TOTAL		1,347	15,860	0.0	1.9	1.2	0.8	11.6	0.0	71.1	1.2	0.0	0.0	12.1	0.0

\* Age composition estimated using samples from personal use and subsistence fisheries at Chitina. Passage date at Miles Lake lagged using an estimated swimming speed obtained from mark and recapture data.

Table 9. Copper/Bering River area chinook salmon commercial common property catch and effort by district and fishing period from final fish ticket summaries, 1989.

Week	Fishing			Copper River		Bering River	
	Period	Dates	Hours	Effort <sup>a</sup>	Catch	Effort <sup>a</sup>	Catch
21	1 <sup>b</sup>	05/15-05/16	24	301	4,132	Closed	
22	2 <sup>b</sup>	05/18-05/19	24	358	2,893	Closed	
22	3	05/22-05/23	24	392	2,852	Closed	
23	4	05/25-05/27	36	408	4,976	Closed	
23	5	05/29-05/30	36	406	5,100	Closed	
24	6	06/01-06/02	24	333	2,329	Closed	
25	7	06/05-06/06	24	395	3,029	Closed	
25	8	06/08-06/09	24	370	1,650	Closed	
26	9	06/12-06/13	24	336	1,697	Closed	
26	10	06/15-06/16	24	246	1,061	Closed	
27	11	06/19-06/20	24	171	569	14	29
27	12	06/22-06/23	24	209	246	13	1
28	13	06/26-06/27	24	102	150	0	0
28	14	07/03-07/04	24	124	37	0	0
29	15	07/10-07/11	24	228	52	0	0
29	16	07/17-07/18	24	223	68	0	0
30	17	07/24-07/26	48	163	7	0	0
30	18	07/31-08/02	48	89	1	0	0
31	19	08/07-08/09	48	182	9	2	0
31	20	08/14-08/16	48	143	3	3	0
32	21	08/21-08/23	48	165	2	10	0
32	22	08/31-09/02	48	132	0	10	0
33	23	09/11-09/13	48	134	0	15	0
34	24	09/21-09/23	48	78	0	8	0
35 <sup>c</sup>	25	09/28-09/30	48	45	0	2	0
TOTAL				476	30,863	40	30

<sup>a</sup> Number of permits reporting catches.

<sup>b</sup> From 1900 hours May 18 until 0001 hours August 01 only drift gill nets with a mesh size smaller than 6 in were allowed.

<sup>c</sup> All waters of Little Softuk were closed north of the entrance to Little Softuk at 60 12.9 N. Latitude.

Table 10. Estimated age composition of Copper River area chinook salmon in commercial common property drift gillnet catches, rod & reel sport catches, and escapements, 1989.

Fishery Element	Area	Location	Sample Size	Estimated Catch or Escapement	Percentage by Brood Year and Age Group									
					1986		1985		1984		1983		1982	
					1.1	1.2	2.1	0.4	1.3	2.2	1.4	2.3	1.5	2.4
Commercial Common Property	Copper River District	Stat Area 212	1,545	30,863	0.1	2.6	0.2	0.0	24.5	0.2	61.7	2.3	2.5	5.9
Sport Catch	Upper Copper River	Gulkana River	176	9,778	0.0	1.7	0.0	0.0	26.7	0.0	69.3	2.3	0.0	0.0
		Klutina River	63	652	0.0	1.6	0.0	0.0	27.0	0.0	66.7	0.0	4.8	0.0
Escapement	Upper Copper River	Klutina River	138	*	0.0	1.4	0.0	0.0	41.3	0.0	55.8	1.4	0.0	0.0

\* Aerial survey peak counts totaled 4,367 fish from all surveyed streams of the upper Copper River drainage. Of these, 262 fish were observed in the Klutina River drainage.

Table 11. Copper/Bering River Area coho salmon commercial common property catch and effort by district and fishing period from fish ticket summaries, 1989.

Week	Fishing			Copper River		Bering River	
	Period	Dates	Hours	Effort <sup>a</sup>	Catch	Effort <sup>a</sup>	Catch
21	1 <sup>b</sup>	05/15–05/16	24	301	0	Closed	
22	2 <sup>b</sup>	05/18–05/19	24	358	0	Closed	
22	3	05/22–05/23	24	392	0	Closed	
23	4	05/25–05/27	36	408	0	Closed	
23	5	05/29–05/30	36	406	0	Closed	
24	6	06/01–06/02	24	333	0	Closed	
25	7	06/05–06/06	24	395	0	Closed	
25	8	06/08–06/09	24	370	1	Closed	
26	9	06/12–06/13	24	336	33	Closed	
26	10	06/15–06/16	24	246	65	Closed	
27	11	06/19–06/20	24	171	106	14	0
27	12	06/22–06/23	24	209	97	13	0
28	13	06/26–06/27	24	102	52	0	0
28	14	07/03–07/04	24	124	26	0	0
29	15	07/10–07/11	24	228	822	0	0
29	16	07/17–07/18	24	223	984	0	0
30	17	07/24–07/26	48	163	445	0	0
30	18	07/31–08/02	48	89	2,313	0	0
31	19	08/07–08/09	48	182	11,227	2	17
31	20	08/14–08/16	48	143	23,614	3	67
32	21	08/21–08/23	48	165	28,756	10	2,728
32	22	08/31–09/02	48	132	42,357	10	5,540
33	23	09/11–09/13	48	134	59,290	15	14,082
34	24	09/21–09/23	48	78	19,350	8	4,224
35 <sup>c</sup>	25	09/28–09/30	48	45	4,916	2	294
TOTAL				476	194,454	40	26,952

<sup>a</sup> Number of permits reporting catches.

<sup>b</sup> From 1900 hours May 18 until 0001 hours August 01 only drift gill nets with a mesh size smaller than 6 in were allowed.

<sup>c</sup> All waters of Little Softuk were closed north of the entrance to Little Softuk at 60 12.9 N. Latitude.

Table 12. Estimated age composition of Copper/Bering River area coho salmon in commercial common property drift gillnet catches, 1989.

District	Sample Size	Commercial Common Property Catch	Percentage of Catch by Brood Year and Age Group			
			1986	1985	1984	
			1.1	2.1	2.2	3.1
Copper River	1,205	194,454	51.8	47.5	0.0	0.7
Bering River	722	26,952	39.4	59.8	0.1	0.7

Table 13. Prince William Sound sockeye salmon weekly commercial common property catch and effort by district and gear type from fish ticket summaries, 1989.

Week	Dates	Gillnet Fisheries						Purse Seine Fisheries			Total PWS Catch
		Coghill Drift Gillnet			Unakwik Drift Gill Net			General Purse Seine			
		Hours	Effort <sup>a</sup>	Catch	Hours	Effort <sup>a</sup>	Catch	Hours	Effort <sup>a</sup>	Catch	
25	6/18-6/24 <sup>b</sup>	60	193	32,845	60	8	7,212		Closed		40,057
26	6/25-7/01	48	272	43,741	60	18	10,785		155	1,278	55,804
27	7/02-7/08	12	207	25,637	12	13	3,202		188	1,321	30,160
28	7/09-7/15	168	0	0	0	0	0		207	1,077	1,077
29	7/16-7/22	0	Closed	Closed	0	Closed	Closed		Closed	Closed	Closed
30	7/23-7/29 <sup>c</sup>	76	206	2,803	0	0	0		220	4,238	7,041
31	7/31-8/05 <sup>d, e</sup>	0	0	0	0	0	0		83	158	158
32	8/06-8/12 <sup>f</sup>	0	0	0	12	57	181		214	311	492
33	8/13-8/19	24	153	380	24	48	32		219	842	1,254
34	8/20-8/26	59	130	577	0	0	0		197	622	1,199
35	8/27-9/02	81	94	73	0	0	0		40	4	77
36	9/03-9/09	84	53	45	0	0	0		1	0	45
37	9/10-9/16	84	27	13	0	0	0		0	0	13
38	9/17-9/23	84	8	0	0	0	0		0	0	0
39	9/24-9/30	84	1	0	0	0	0		0	0	0
Total			353	106,114		98	21,412		243	9,851	137,377

<sup>a</sup> Number of permits reporting catches.

<sup>b</sup> The Esther Subdistrict and all waters of the Coghill District south of a line extending from Esther Rocks to Point Pigot were closed.

<sup>c</sup> The Esther Subdistrict and the waters of Quillion and Lake Bays were open, except that the waters inside of a line of bouys off the oil boom in Lake Bay were closed. On July 27, the Coghill District was open for 36 h, except for all waters of the Coghill District north of a line extending from Esther Rocks to Point Pigot and Esther Passage were closed.

<sup>d</sup> The entire Coghill District was open, except that the Esther Hatchery Special Harvest Area was closed inside of the oil booms located in Lake Bay.

<sup>e</sup> The entire Coghill District was open except at the Esther Hatchery waters inside a buoyed line approximately 50 ft off the oil boom in Lake Bay were closed.

<sup>f</sup> The Esther Subdistrict and the waters of Wells Passage south of a line from Esther Rocks to Point Pigot were open. The Esther Hatchery Special Harvest Area was closed inside of a buoyed line approximately 50 ft outside the oil boom. This was effective until September 30.



Table 14. Estimated age composition of sockeye salmon in Prince William Sound commercial common property drift gillnet catches, 1989.

Percentage of Catch by Brood Year and Age Group									
Fishery/District	Statistical Area	Sample Size	Commercial Common Property Catch	1985	1984		1983		1982
				1.2	1.3	2.2	1.4	2.3	2.4
Unakwik	229	427	21,412	0.7	91.9	0.9	0.7	6.3	0.2
Coghill	223	1,127	106,114	0.8	94.8	0.7	0.5	3.2	0

Table 15. Estimated age composition of sockeye salmon in sampled escapements to Prince William Sound, 1989.

Location	Sample Size	Estimated Escapement	Percentage by Brood Year and Age Group										
			1986		1985			1984			1983		1982
			0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	2.4
Coghill	1,808	37,751	0.0	0.1	0.1	2.1	0.5	0.0	82.4	3.7	0.5	10.1	0.7
Eshamy	1,706	58,127	0.0	1.0	0.0	78.8	0.0	0.0	6.5	12.8	0.0	0.9	0.0
Jackpot	363	2,983	0.3	0.0	0.8	5.2	0.0	0.3	82.6	3.6	0.3	6.9	0.0

Table 16. Prince William Sound weekly coho salmon commercial catches by district and gear type from fish ticket summaries, 1989.

Week		Drift Gillnet		Purse Seine								Total PWS Catch
No.	Dates	Unakwik	Coghill	Eastern	Northern	Unakwik	Coghill	Northwestern	Southwestern	Montague	Southeastern	
25	6/18-6/24	0	15	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	15
26	6/25-7/01	0	6	15	2	Closed	Closed	Closed	Closed	Closed	Closed	23
27	7/02-7/08	7	183	52	36	Closed	Closed	Closed	Closed	Closed	Closed	278
28	7/09-7/15	Closed	Closed	42	0	Closed	Closed	Closed	Closed	Closed	0	42
29	7/16-7/22	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	0
30	7/23-7/29	Closed	1,862	Closed	497	Closed	613	78	Closed	Closed	15	3,065
31	7/31-8/05	Closed	Closed	Closed	15	Closed	Closed	Closed	Closed	Closed	Closed	15
32	8/06-8/12	17	Closed	2,576	128	Closed	Closed	Closed	Closed	Closed	307	3,028
33	8/13-8/19	3	5,276	5,768	4,529	Closed	5,219	24	Closed	Closed	0	20,819
34	8/20-8/26	Closed	17,952	12,342	1,837	Closed	25,384	1,582	Closed	Closed	Closed	59,097
35	8/27-9/02	Closed	19,469	99	Closed	Closed	6,848	Closed	Closed	Closed	Closed	26,416
36	9/03-9/09	Closed	21,758	Closed	Closed	Closed	1,420	Closed	Closed	Closed	Closed	23,178
37	9/10-9/16	Closed	13,424	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	13,424
38	9/17-9/23	Closed	692	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	692
39	9/24-9/30	Closed	100	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	100
Total		27	80,737	20,894	7,044	0	39,484	1,684	0	0	322	150,192

Table 17. Estimated age composition of coho salmon in Prince William Sound commercial common property drift gillnet and purse seine catches, 1989.

District	Stat Area	Sample Size	Commercial Common Property Catch	Brood Year and Age Group		
				1986	1985	1984
				1.1	2.1	3.1
Coghill	223	838	120,221	92.2	7.4	0.4

Table 18. Prince William Sound chum salmon weekly commercial common property catches by district and gear type from fish ticket summaries, 1989.

Week		Drift Gillnet		Purse Seine								Total PWS Catch
No.	Dates	Unakwik	Coghill	Eastern	Northern	Unakwik	Coghill	Northwestern	Southwestern	Montague	Southeastern	
25	6/18-6/24	64	46,704	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	46,768
26	6/25-7/01	205	40,837	42,297	60,965	Closed	Closed	Closed	Closed	Closed	Closed	144,304
27	7/02-7/08	67	6,040	12,980	18,051	Closed	Closed	Closed	Closed	Closed	Closed	37,138
28	7/09-7/15	Closed	Closed	15,627	4,594	Closed	Closed	Closed	Closed	Closed	338	20,559
29	7/16-7/22	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	0
30	7/23-7/29	Closed	43,211	Closed	45,853	Closed	23,396	6,134	Closed	Closed	410	119,004
31	7/31-8/05	Closed	Closed	Closed	1,452	Closed	Closed	Closed	Closed	Closed	Closed	1,452
32	8/06-8/12	37	Closed	95,258	4,108	Closed	Closed	Closed	Closed	Closed	17	99,420
33	8/13-8/19	31	27,495	85,715	51,345	Closed	71,626	274	Closed	Closed	0	236,486
34	8/20-8/26	Closed	19,541	75,951	6,787	Closed	28,336	1,454	Closed	Closed	Closed	132,069
35	8/27-9/02	Closed	5,746	13,314	Closed	Closed	977	Closed	Closed	Closed	Closed	20,037
36	9/03-9/09	Closed	3,942	Closed	Closed	Closed	304	Closed	Closed	Closed	Closed	4,246
37	9/10-9/16	Closed	988	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	988
38	9/17-9/23	Closed	80	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	80
39	9/24-9/30	Closed	0	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	0
Total		404	194,584	341,142	193,155	0	124,639	7,862	0	0	765	862,551

Table 19. Estimated age composition of chum salmon in Prince William Sound commercial common property purse seine and gillnet catches, 1989.

Gear Type or Fishery	District	Statistical Area	Sample Size	Commercial Common Property Catch	Percentage of Catch by Brood Year and Age Group					
					1987	1986	1985	1984	1983	1982
					0.1	0.2	0.3	0.4	0.5	0.6
Purse Seine	Eastern	221	1,240	341,142	0.0	0.5	85.4	11.5	2.7	0.0
	Northern	222	1,194	193,155	0.0	1.0	74.1	20.3	4.4	0.2
	Eshamy <sup>a</sup>	225	1,145	102,811	0.1	3.7	41.0	51.7	3.6	0.0
	Southeastern	228	136	765	0.0	2.2	83.1	11.8	2.9	0.0
	Total		3,715	637,873	0.0	1.2	74.8	20.6	3.4	0.1
Drift Gillnet	Coghill <sup>b</sup>	223	779	319,223	0.0	1.2	78.9	17.1	2.7	0.0
Total			4,494	957,096	0.0	1.2	76.2	19.5	3.1	0.0

<sup>a</sup> Main Bay Hatchery cost recovery harvest.

<sup>b</sup> Includes some catches from commercial purse seines.

Table 20. Estimated hatchery contributions of chum salmon to the commercial common property harvests, hatchery cost recovery harvests, hatchery brood stock escapements, and chum salmon total return to Prince William Sound, 1989.

Hatchery	Commercial Common Property Catch	Cost Recovery Sales Harvest <sup>a</sup>	Brood Stock Escapement <sup>b</sup>	Total Run
Solomon Gulch	25,000	1,658	8,000	34,658
Cannery Creek	0	0	0	0
Wallace H. Noerenberg	159,611	17,429	64,948	241,988
Armin F. Koernig	0	9,334	1,565	10,899
Main Bay	15,000 <sup>c</sup>	102,941	0	117,941
Total	214,611	131,362	74,513	405,486

<sup>a</sup> Does not include brood stock carcass sales. Harvest data presented in this table were obtained from PWSAC summary reports and may not match harvest data obtained from fish tickets presented elsewhere.

<sup>b</sup> Includes holding mortalities, excess fish, and carcasses from fish used for brood stock that are also sold for cost recovery. Harvest figures presented here may be less than sales harvest totals derived from fish ticket summaries presented elsewhere.

<sup>c</sup> Preliminary estimates based on recoveries of coded wire tags from hatchery released fish.

Table 21. Prince William Sound pink salmon weekly commercial common property catches by district and gear type from final fish ticket summaries, 1989.

Week		Drift Gillnet		Purse Seine								Total PWS Catch
No.	Dates	Unakwik	Coghill	Eastern	Northern	Unakwik	Coghill	Northwestern	Southwestern	Montague	Southeastern	
25	6/18-6/24	0	31	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	31
26	6/25-7/01	2	529	427,200	33,937	Closed	Closed	Closed	Closed	Closed	Closed	461,668
27	7/02-7/08	17	1,001	448,378	24,514	Closed	Closed	Closed	Closed	Closed	Closed	473,910
28	7/09-7/15	Closed	Closed	1,754,260	3,940	Closed	Closed	Closed	Closed	Closed	3,722	1,761,922
29	7/16-7/22	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	0
30	7/23-7/29	Closed	219,551	Closed	1,512,432	Closed	336,344	60,909	Closed	Closed	44,326	2,173,562
31	7/31-8/05	Closed	Closed	Closed	120,093	Closed	Closed	Closed	Closed	Closed	Closed	120,093
32	8/06-8/12	30,954	Closed	344,030	2,180,310	Closed	Closed	Closed	Closed	Closed	19,173	2,574,467
33	8/13-8/19	10,847	182,630	133,201	2,132,522	Closed	1,667,698	13,343	Closed	Closed	5,956	4,146,197
34	8/20-8/26	Closed	158,290	43,546	414,522	Closed	1,207,462	107,313	Closed	Closed	Closed	1,931,133
35	8/27-9/02	Closed	41,247	481	Closed	Closed	66,270	Closed	Closed	Closed	Closed	107,998
36	9/03-9/09	Closed	20,434	Closed	Closed	Closed	19,191	Closed	Closed	Closed	Closed	39,625
37	9/10-9/16	Closed	4809	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	4,809
38	9/17-9/23	Closed	0	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	0
39	9/24-9/30	Closed	0	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed	0
Total		41,820	628,522	3,151,096	6,422,270	0	3,296,965	181,565	0	0	73,177	13,795,415



Table 22. Estimated hatchery contributions of pink salmon to the commercial common property harvests, hatchery cost recovery harvests, hatchery brood stock escapements, and pink salmon total return to Prince William Sound, 1989.

Hatchery	1988 Release	Commercial Common Property Catch <sup>a</sup>	Cost Recovery Sales Harvest <sup>b</sup>	Brood Stock Escapement <sup>c</sup>	Total Return
Solomon Gulch	130,900,000	2,500,000	667,814	210,947	3,378,761
Cannery Creek	95,400,000	6,013,955	633,150	299,530	6,946,635
Wallace H. Noerenberg	195,300,000	3,854,052	2,778,696	497,727	7,130,475
Armin F. Koernig	110,900,000	0	3,716,053	221,873	3,937,926
Main Bay	0	0	0	0	0
Total	532,500,000	12,368,007	7,795,713	1,230,077	21,393,797

<sup>a</sup> Preliminary estimates based on recoveries of coded wire tags from hatchery released fish.

<sup>b</sup> Does not include brood stock carcass sales. Harvest data presented in this table were obtained from PWSAC summary reports and may not match harvest data obtained from fish tickets presented elsewhere.

<sup>c</sup> Includes holding mortalities, excess fish, and carcasses from fish used for brood stock that are also sold for cost recovery. Harvest figures presented here may be less than sales harvest totals derived from fish ticket summaries presented elsewhere.

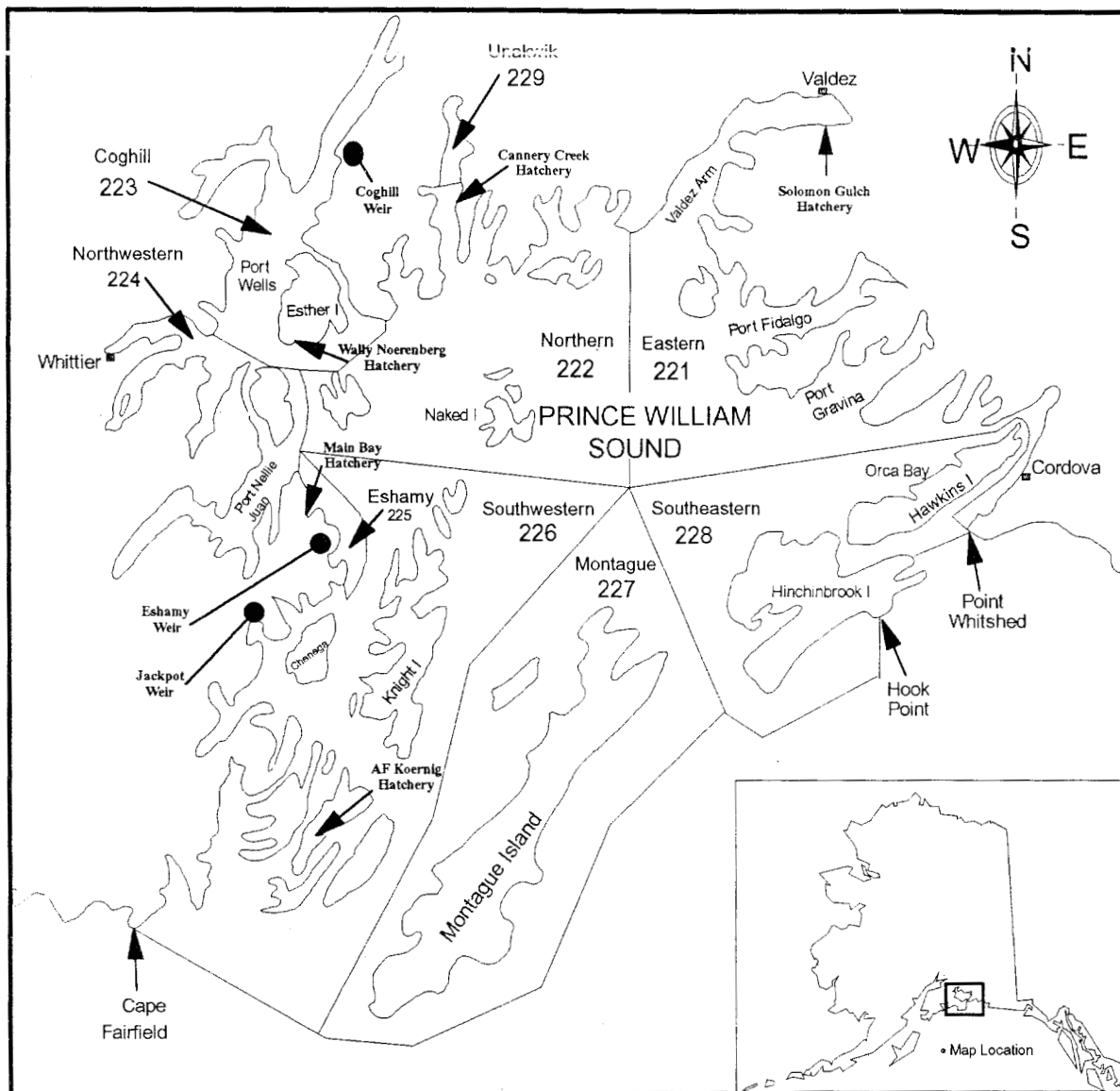


Figure 1. Prince William Sound area showing commercial fishing districts, hatcheries, and weir locations.

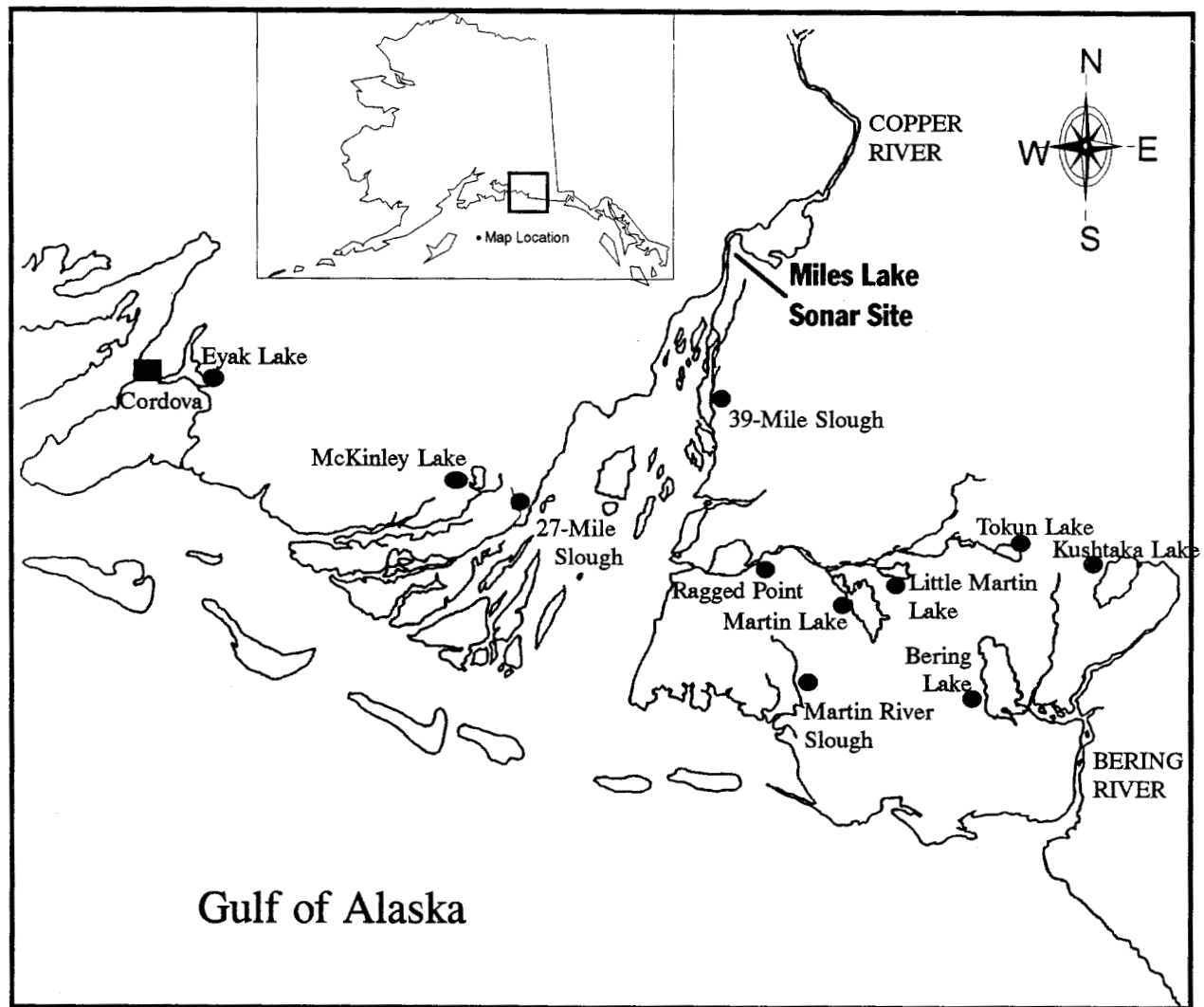


Figure 2. The Copper/Bering River area and the major coastal spawning areas which contribute to the commercial salmon fisheries.

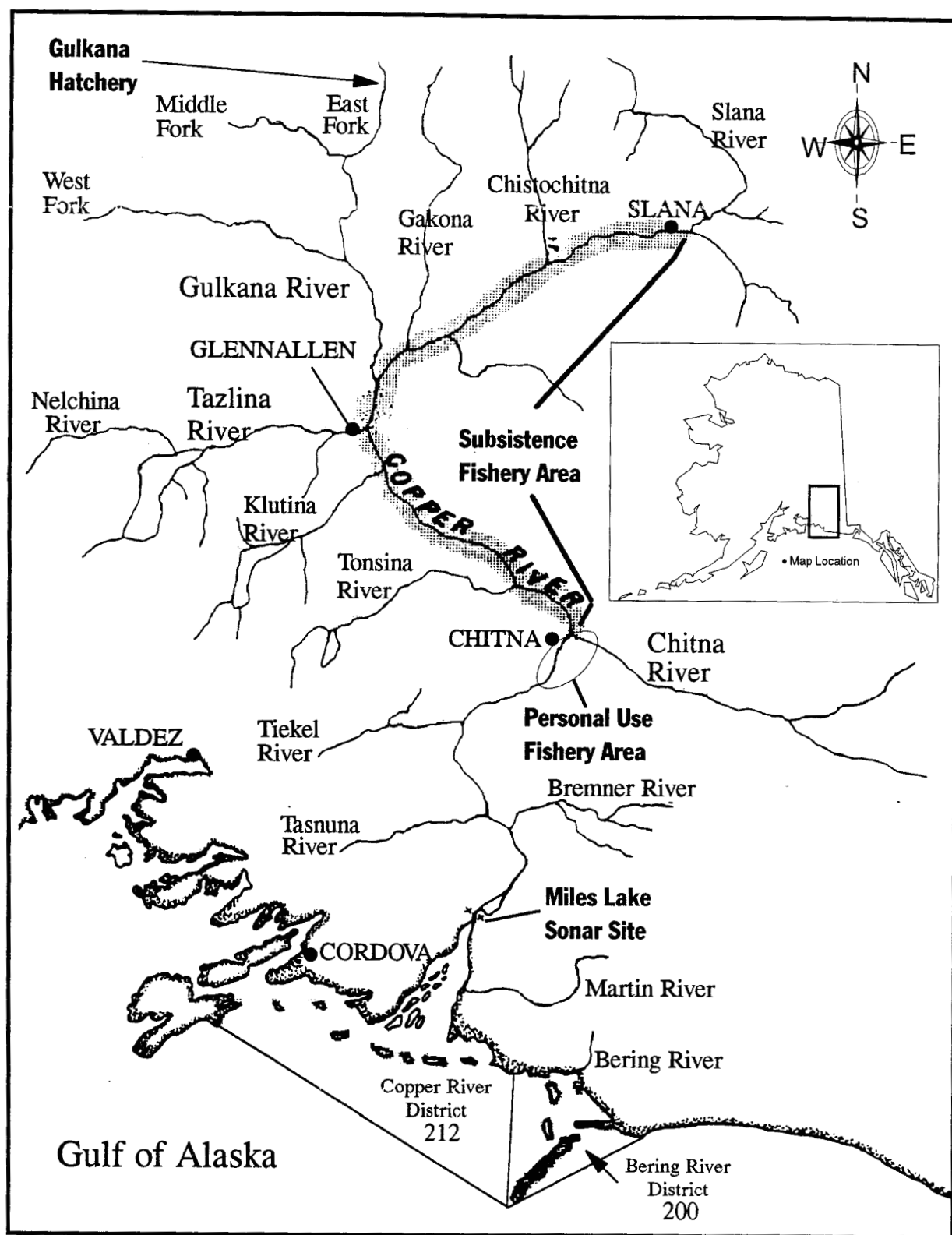


Figure 3. The location of the personal use fishery near Chitna and the subsistence fishery which extends from Chitna to Slana along the upper Copper River.

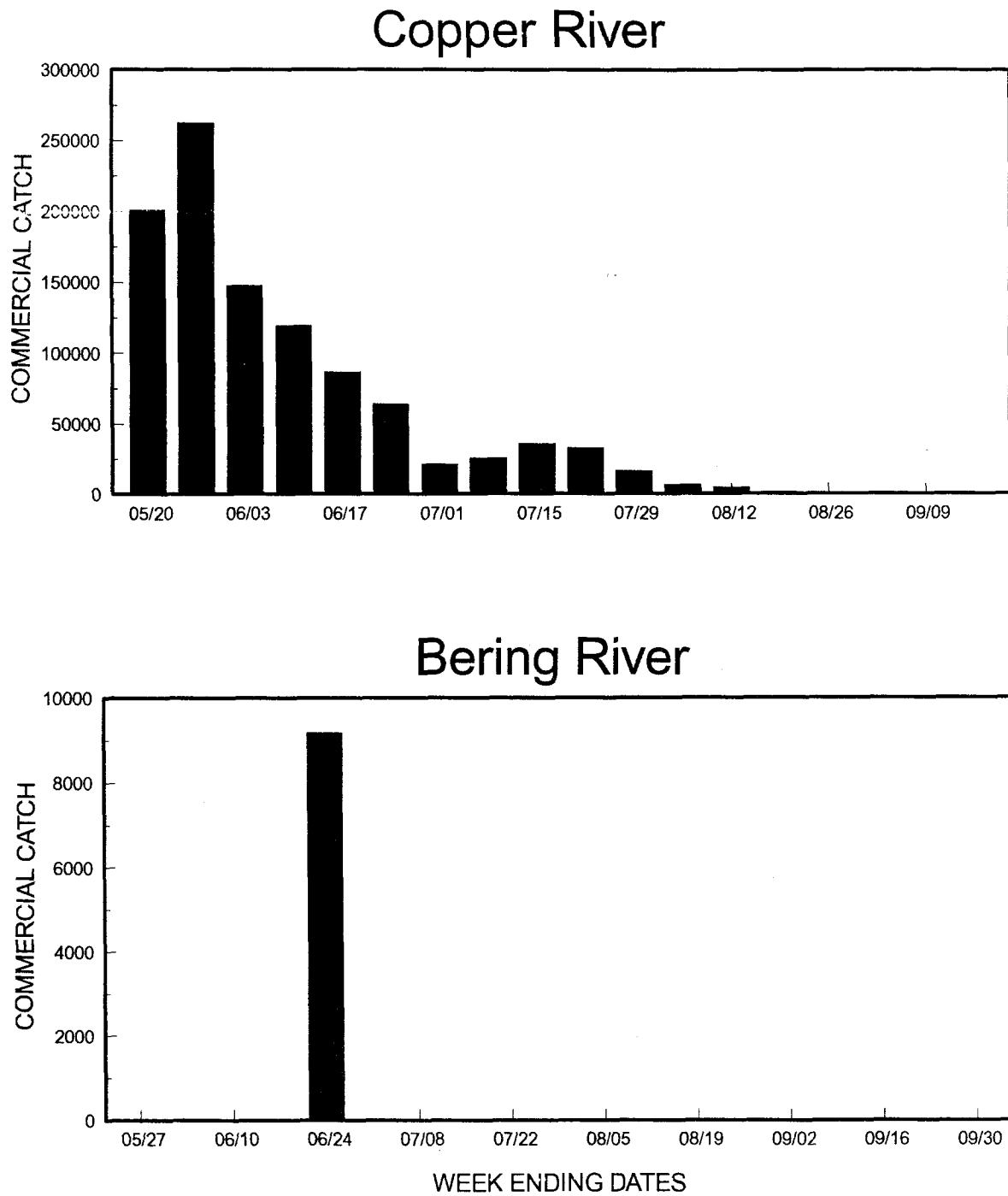


Figure 4. Weekly sockeye salmon commercial common property catches from the drift gillnet fisheries of the Copper River and Bering River Districts, 1989

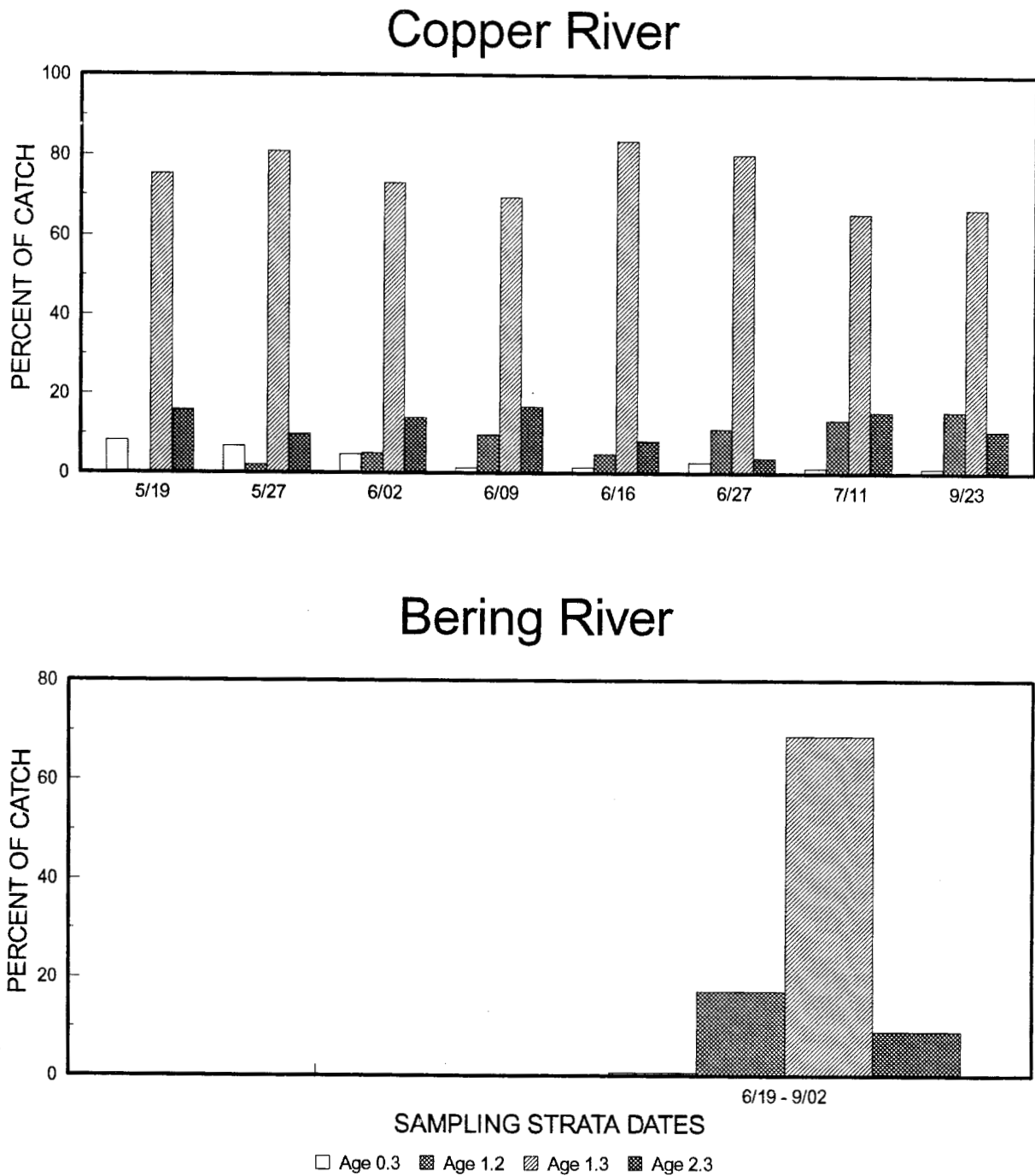


Figure 5. Temporally stratified age composition of sockeye salmon from the commercial common property drift gillnet fisheries in the Copper River and Bering River Districts, 1989

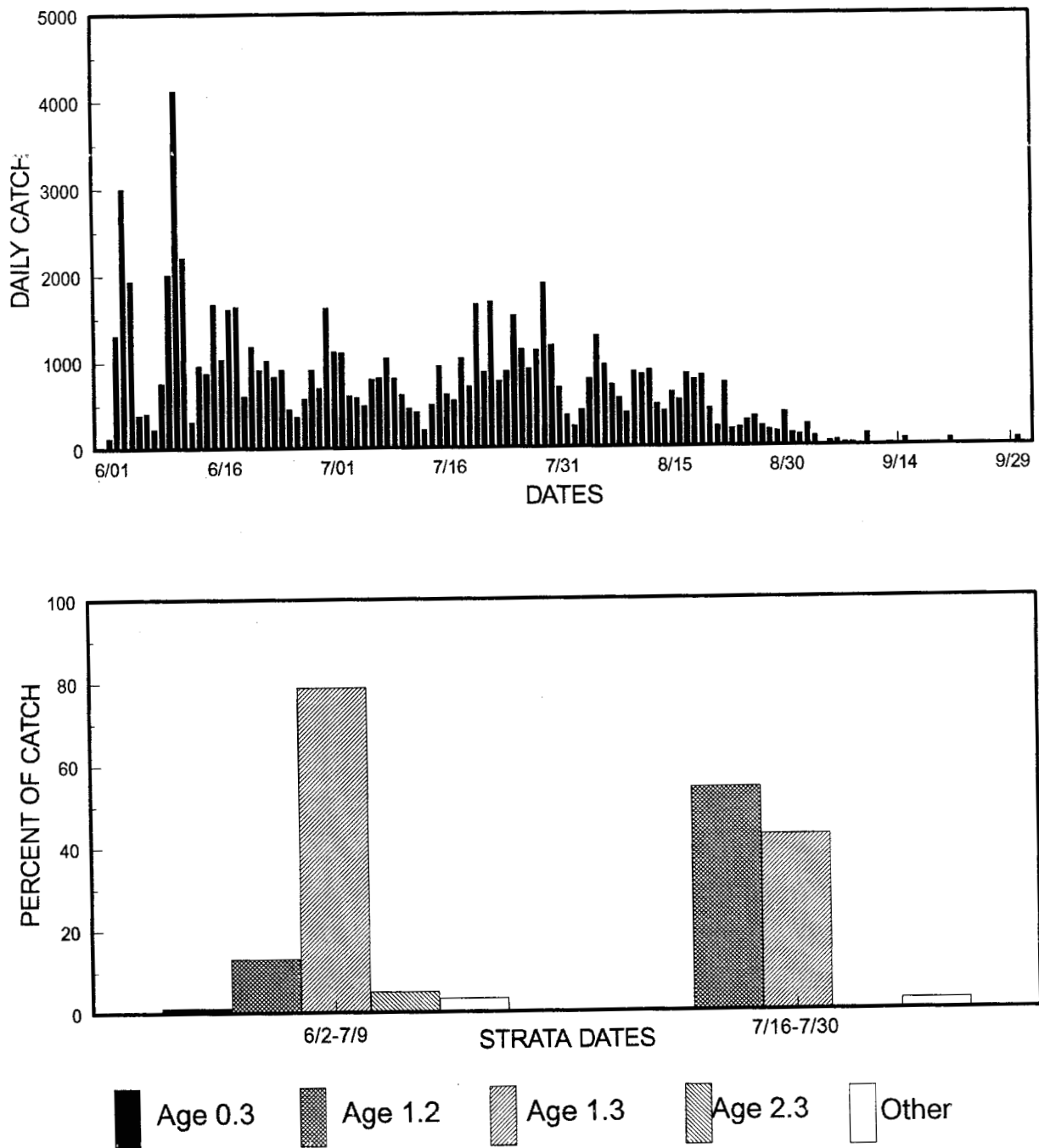
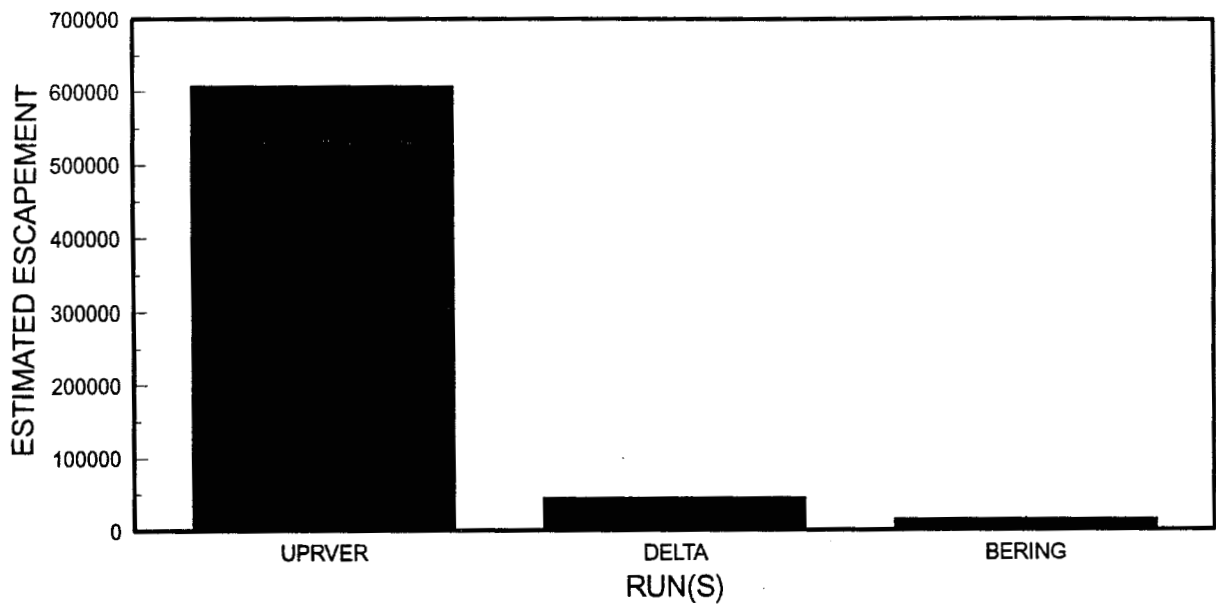


Figure 6. Daily sockeye salmon catch in the combined subsistence and personal use fisheries and the temporally stratified age composition of those catches, upper Copper River, 1989

## Total Escapement



## Age Composition

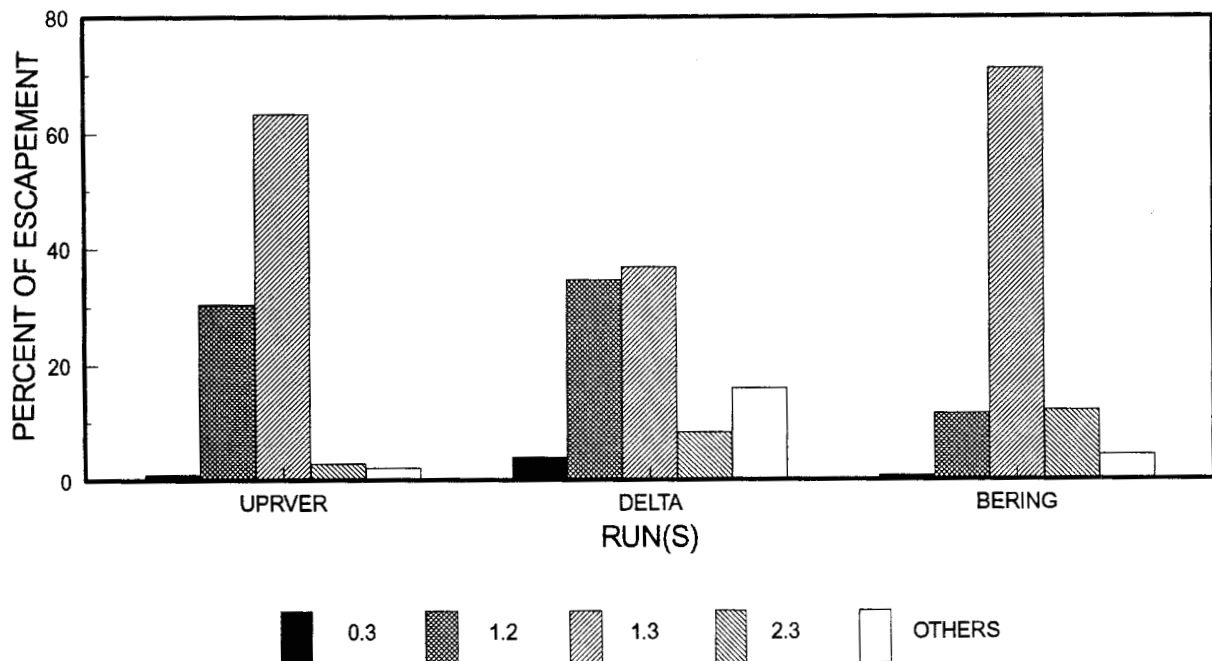
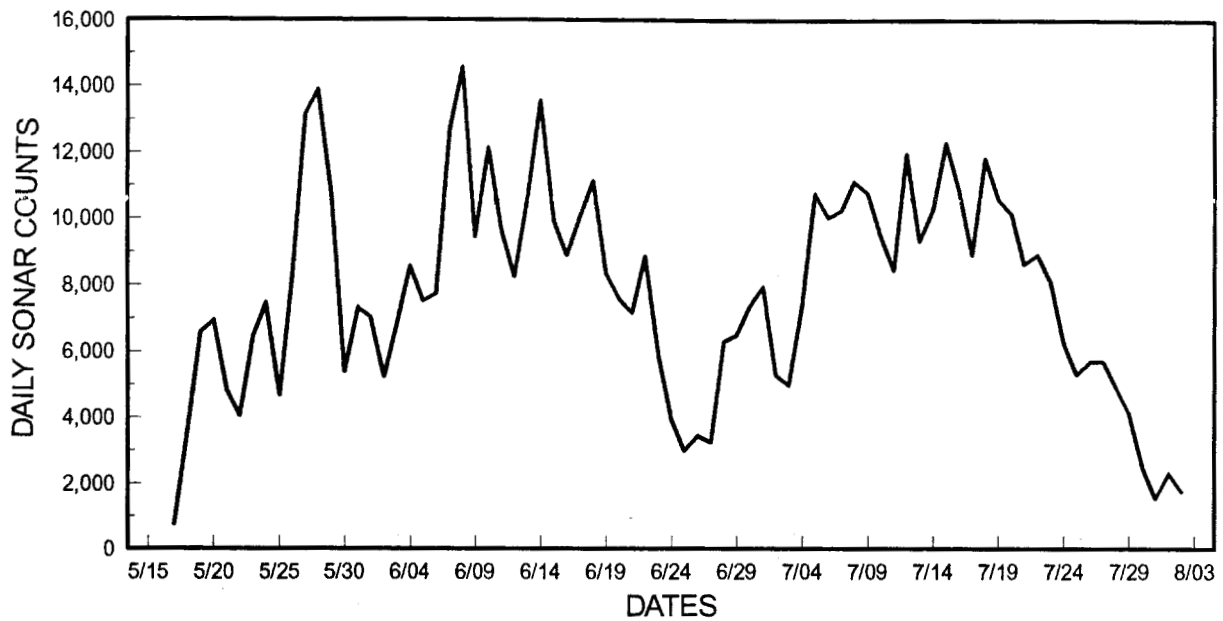


Figure 7. Sockeye salmon escapement to the upper Copper River, Copper River Delta, and Bering River and the estimated age composition of those escapements, 1989



## Escapement Daily Sonar Counts



## Age Composition

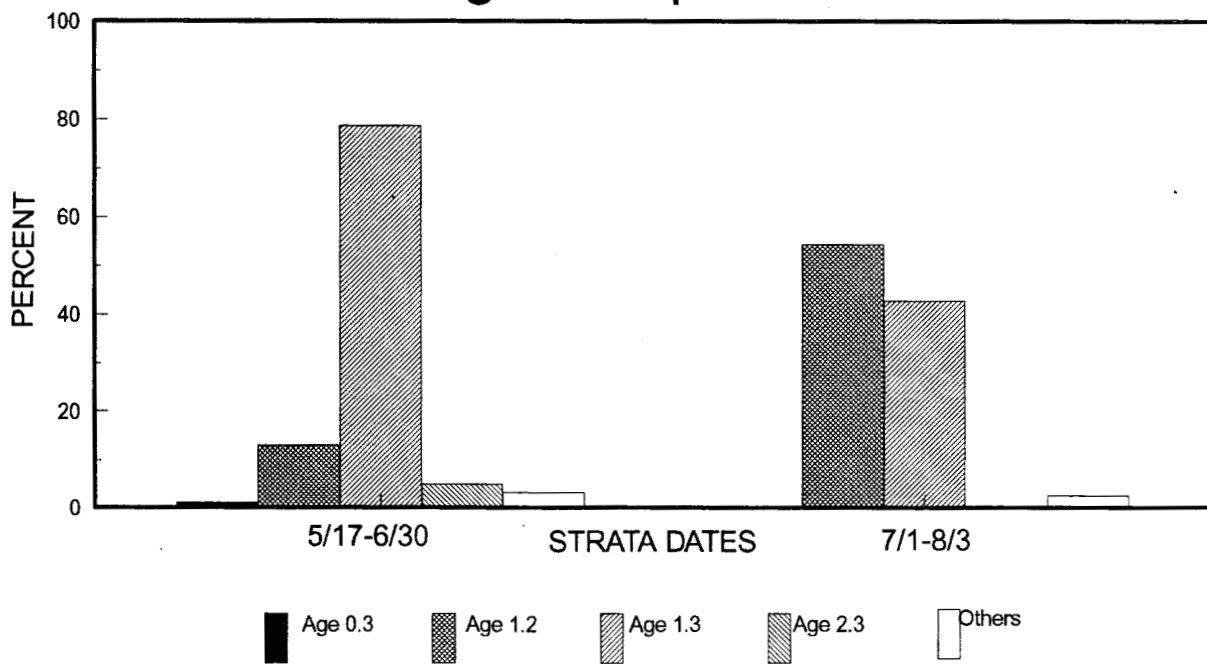
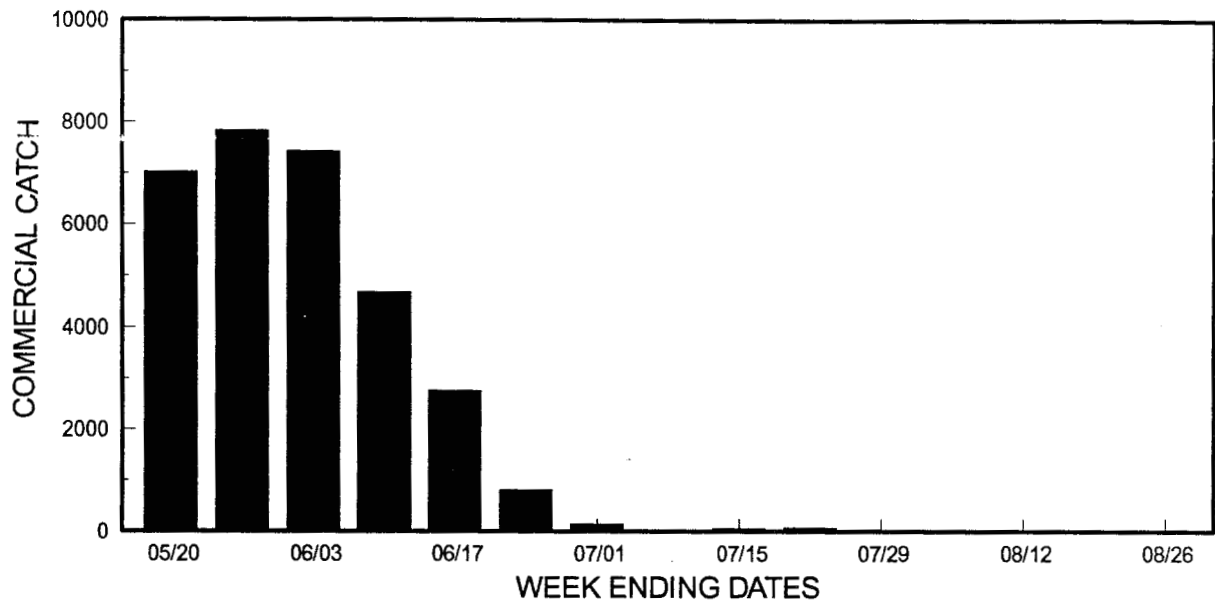


Figure 8. Daily counts of the sockeye salmon escapement to the upper Copper River past the Miles Lake sonar project site and the temporally stratified age composition of that escapement, 1989

## Commercial Catch



## Age Composition

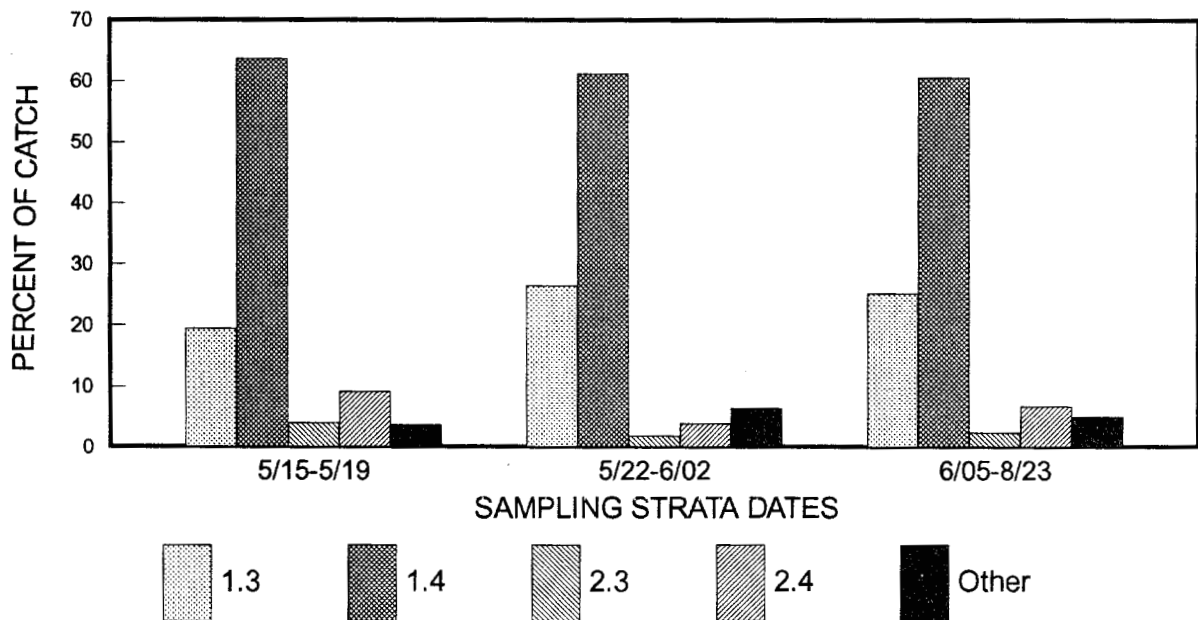


Figure 9. Weekly chinook salmon catches from the Copper River District commercial common property drift gillnet fishery and the temporally stratified age composition of those catches, 1989

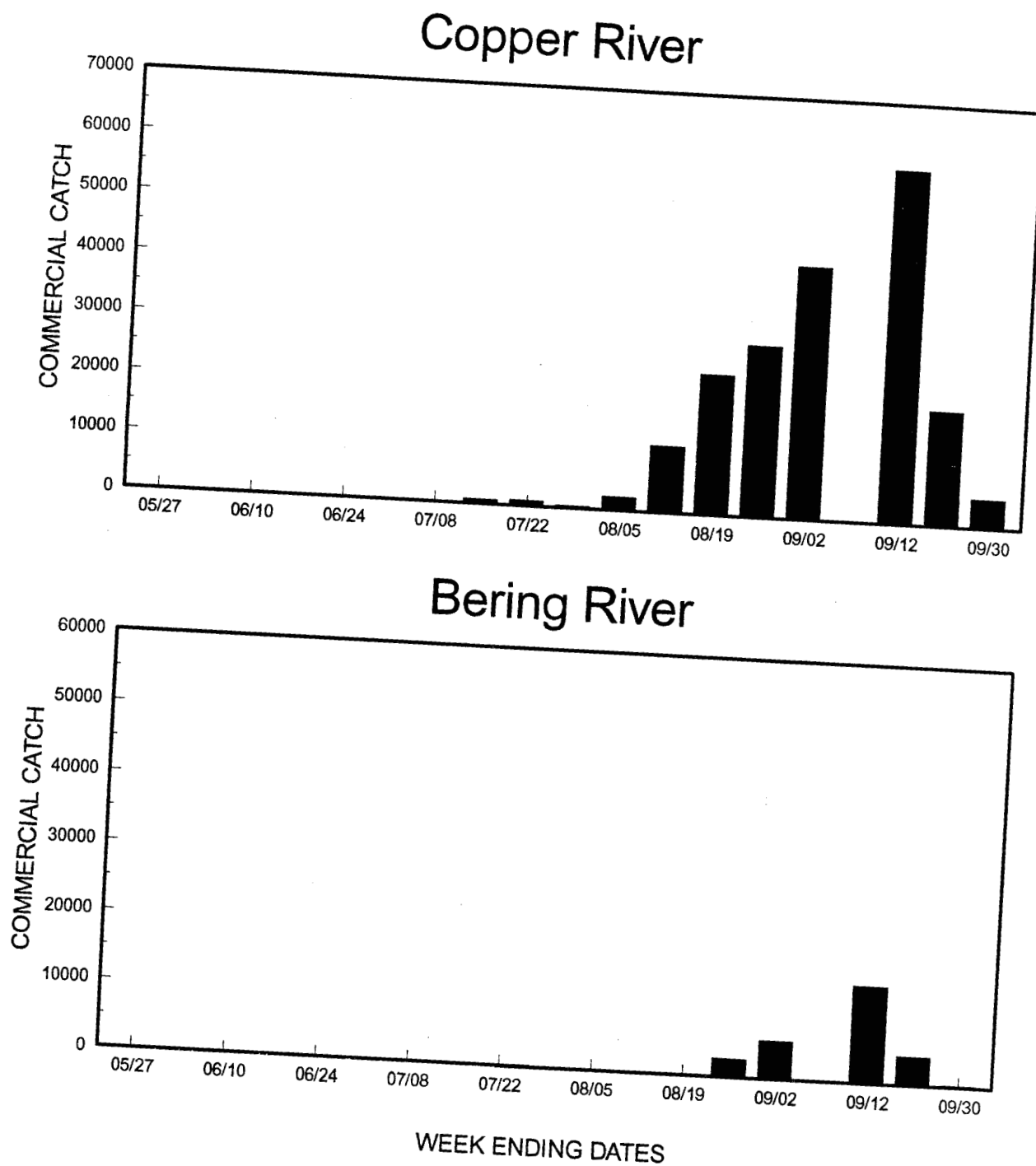


Figure 10. Weekly coho salmon catches from the Copper River District and Bering River District commercial common property drift gillnet fisheries, 1989

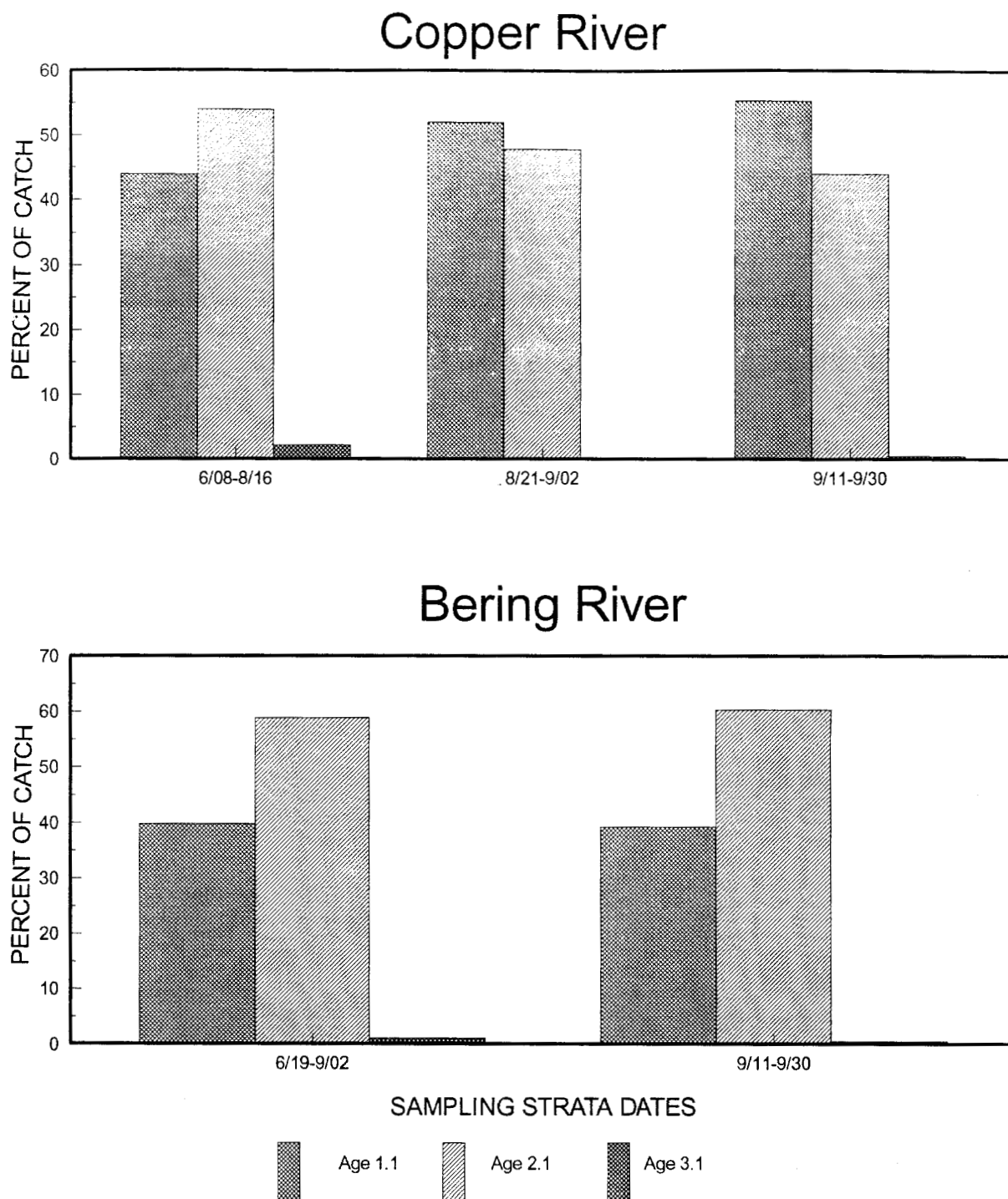
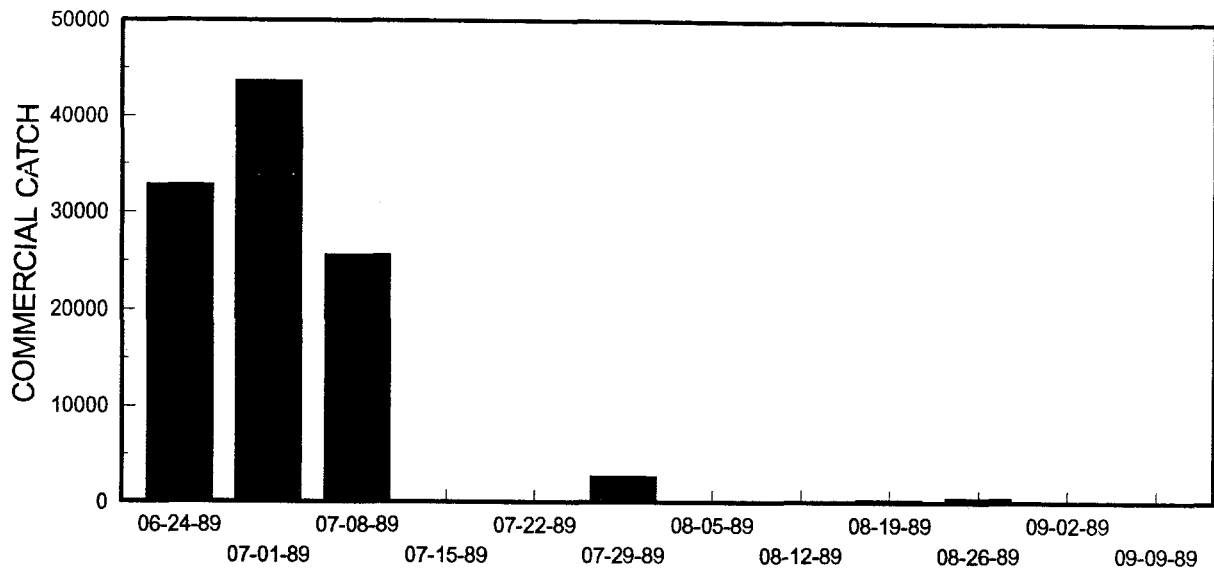


Figure 11. Temporally stratified age composition of coho salmon from the commercial common property drift gillnet fisheries in the Copper River and Bering River Districts, 1989

## Coghill District



## Unakwik District

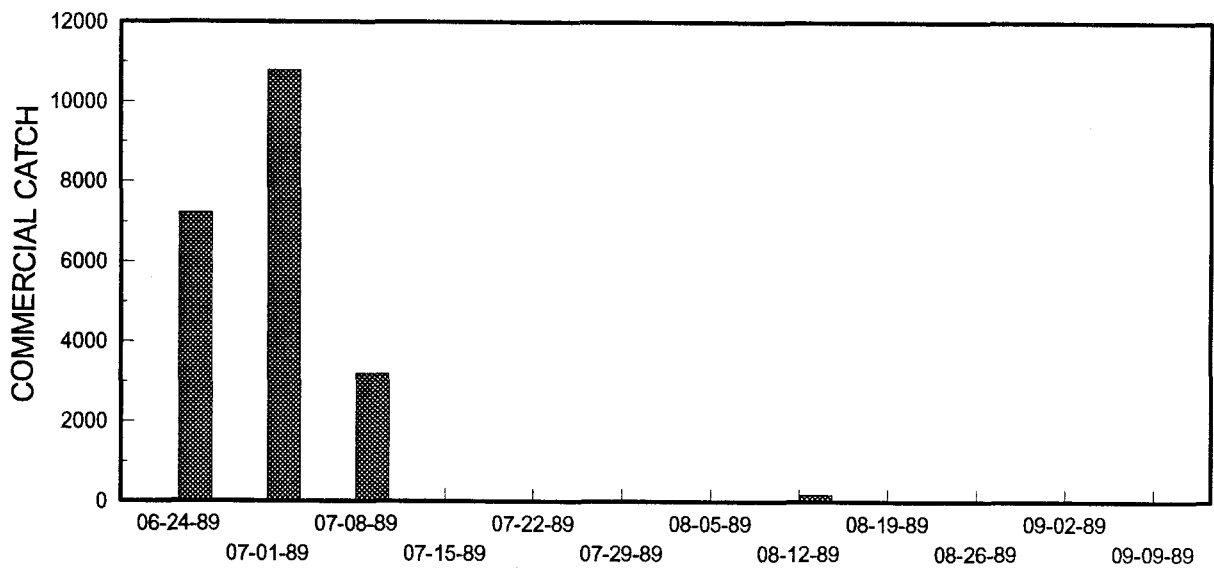


Figure 12. Weekly sockeye salmon catches from the Coghill District and Unakwik District commercial common property drift gillnet fisheries, 1989

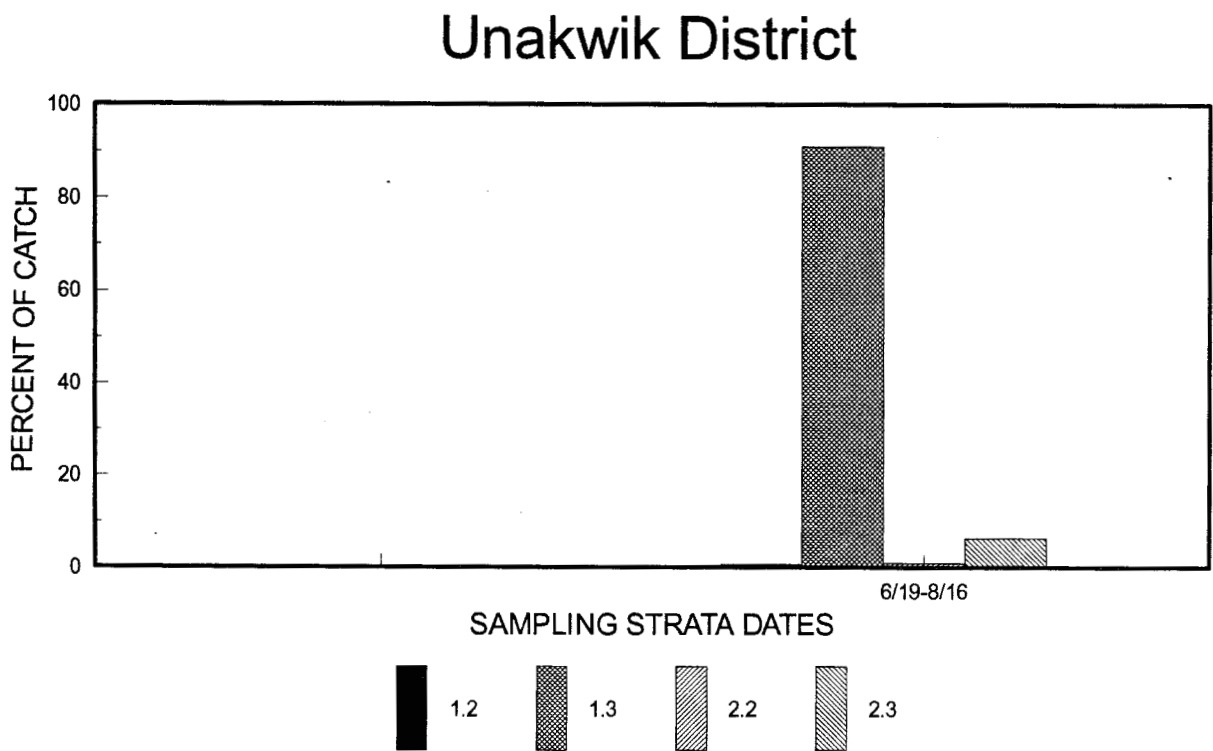
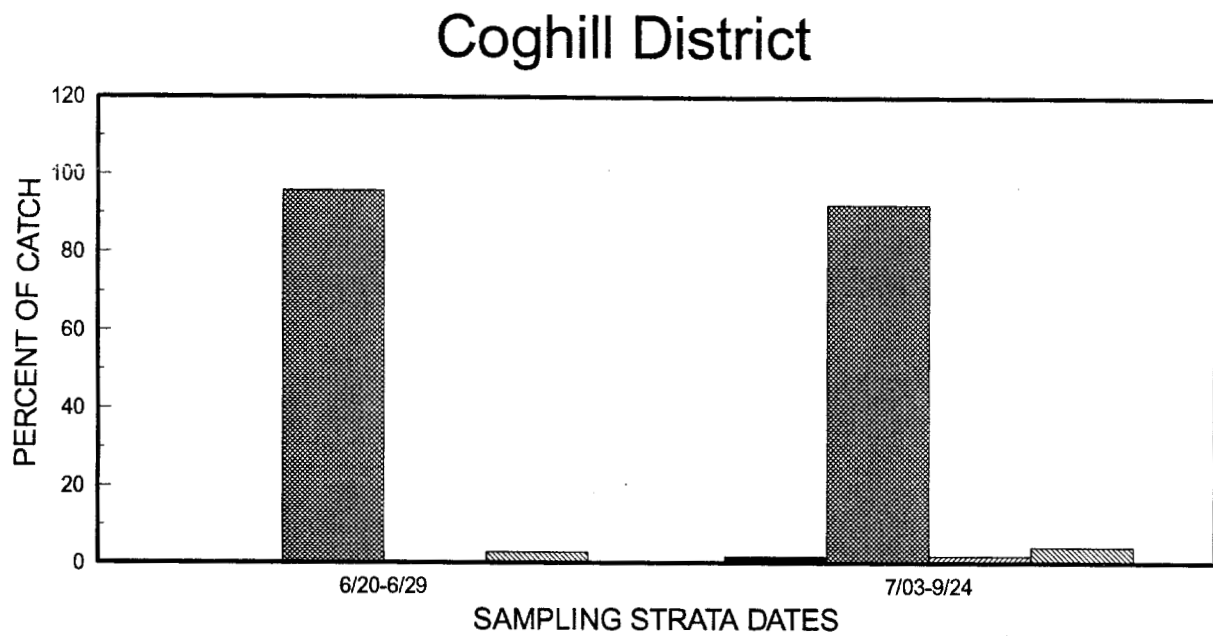
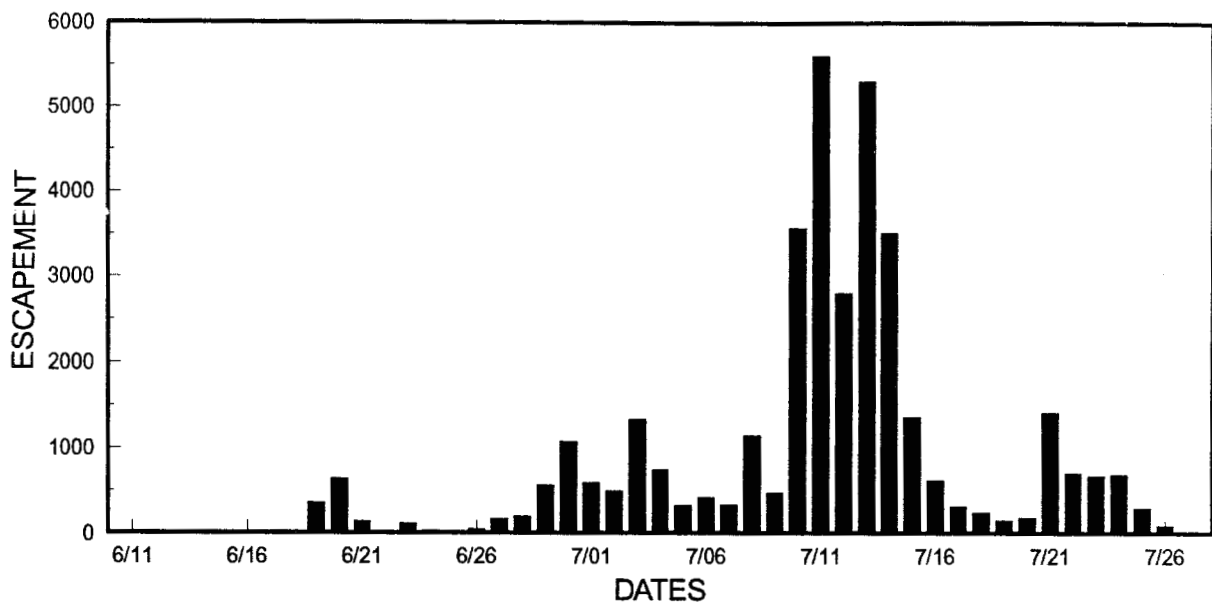


Figure 13. Temporally stratified age composition of sockeye salmon from the commercial common property drift gillnet fisheries in the Coghill and Unakwik Districts, 1989

## Daily Escapement Counts



## Age Composition

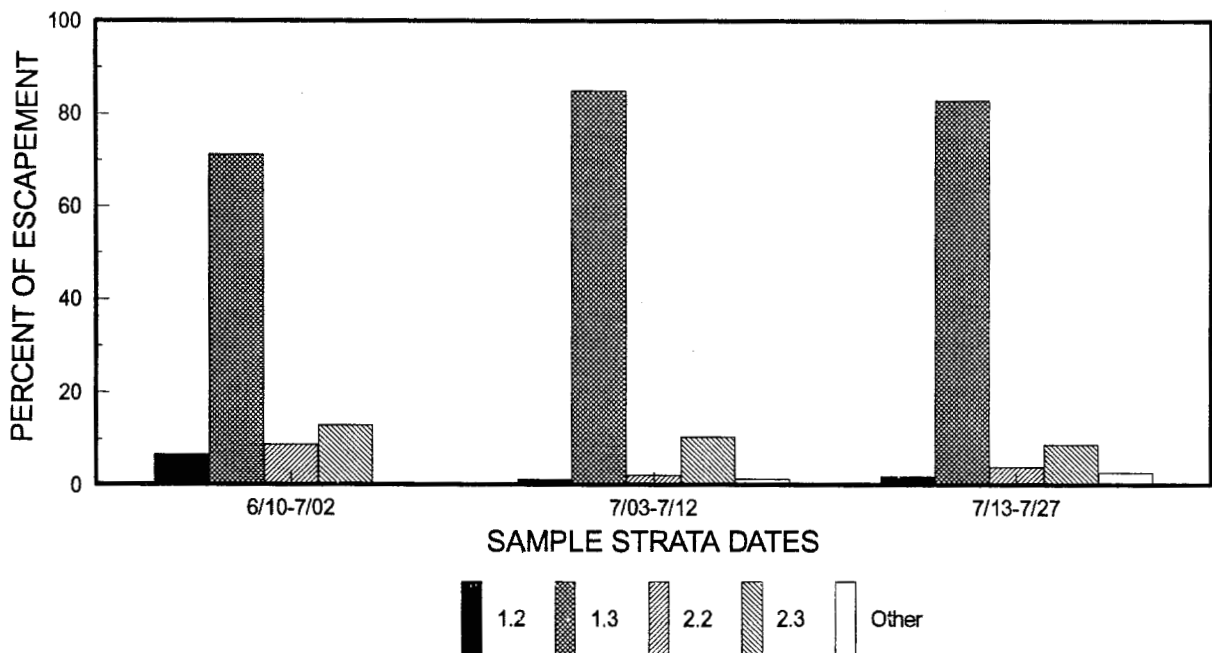
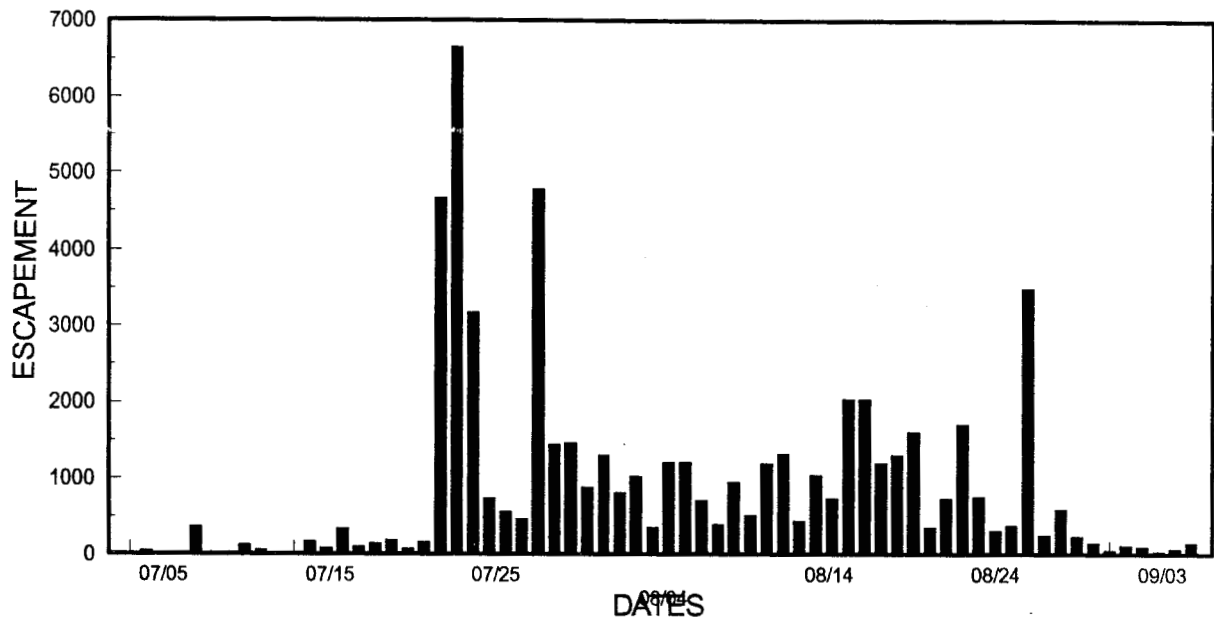


Figure 14. Daily sockeye escapement through the weir below Coghill Lake and the temporally stratified age composition of that escapement, Prince William Sound, 1989

## Daily Escapement Counts



## Age Composition

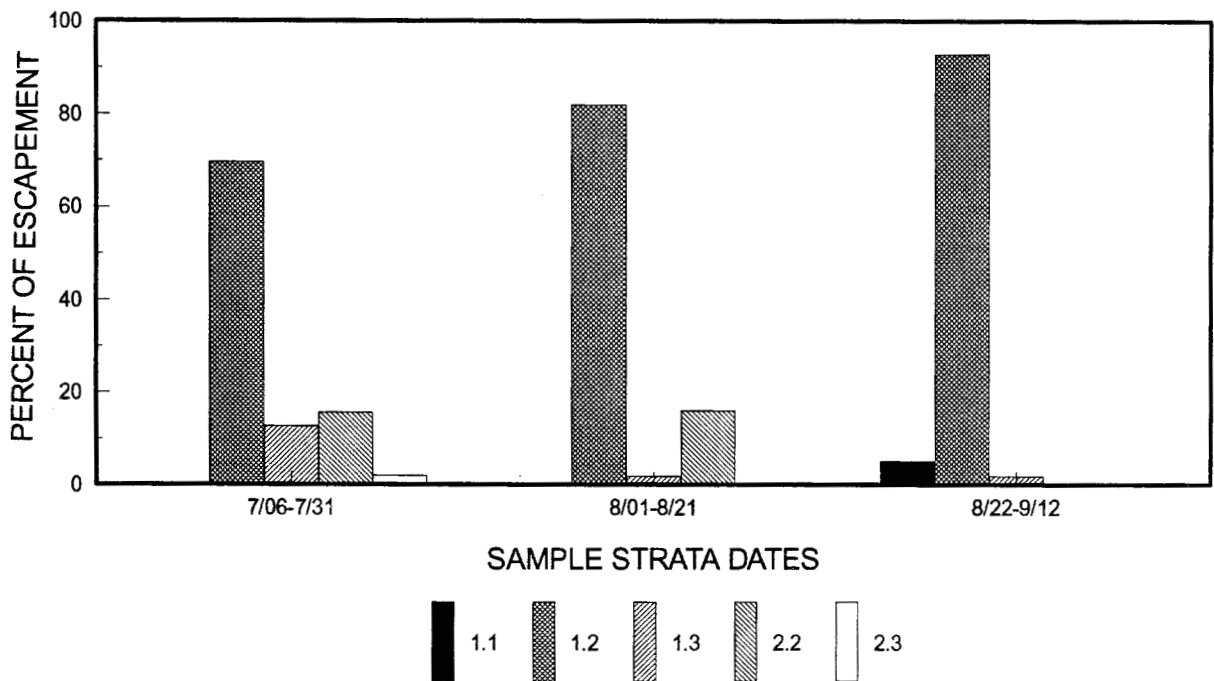
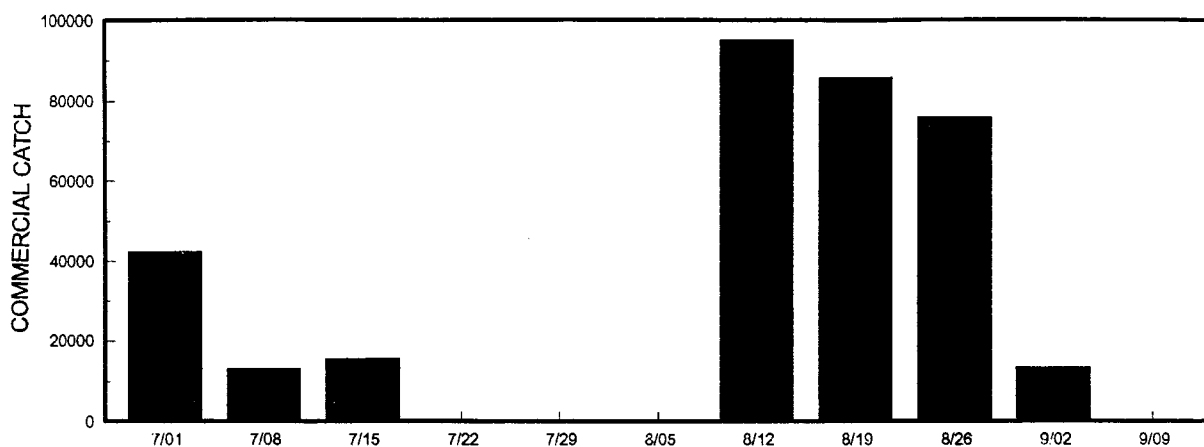


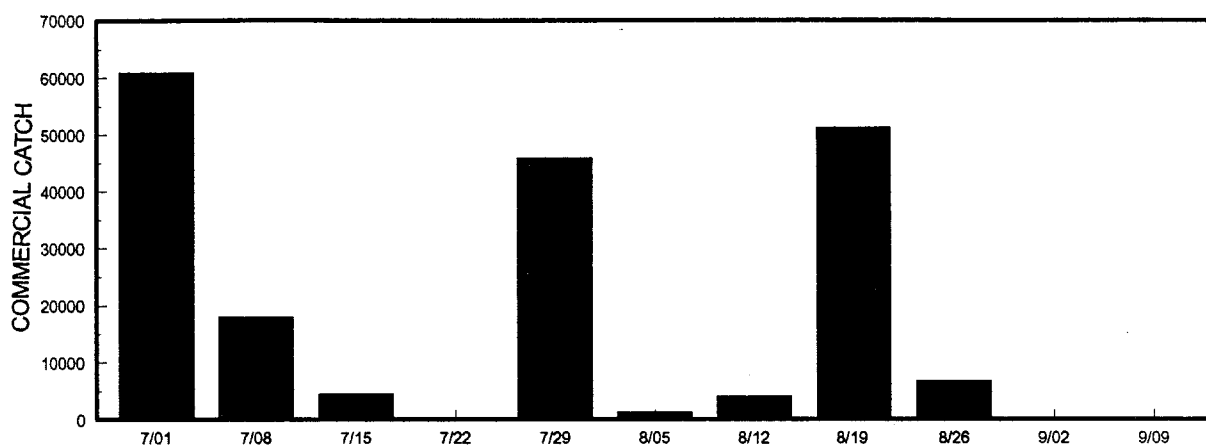
Figure 15. Daily sockeye escapement through the weir at the head of Eshamy Lagoon and the temporally stratified age composition of that escapement, Prince William Sound, 1989



## Eastern District



## Northern District



## Coghill District

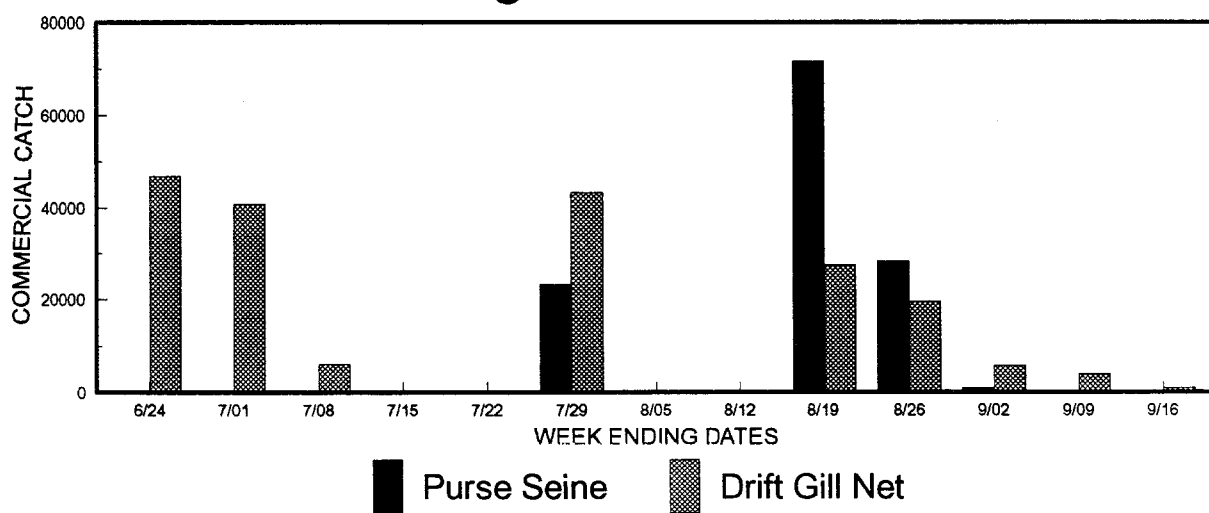
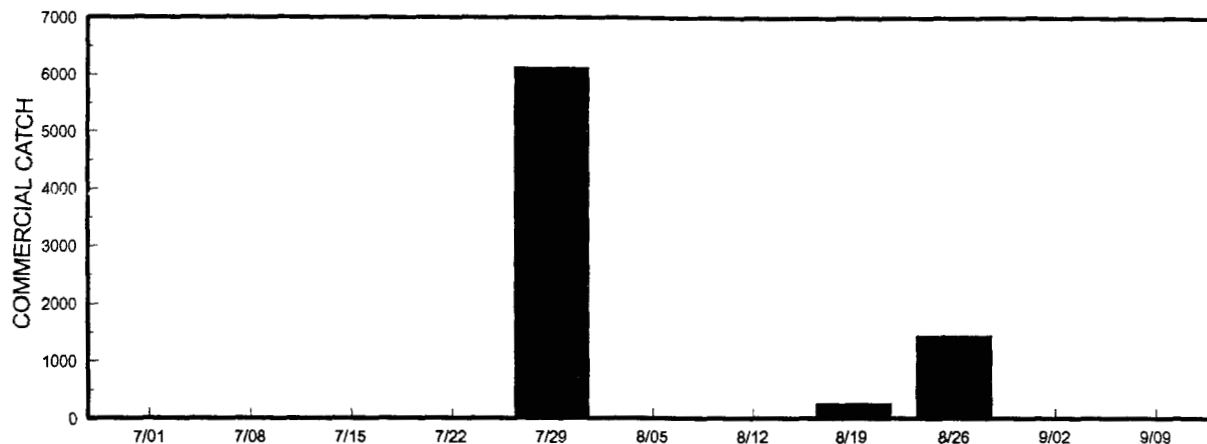
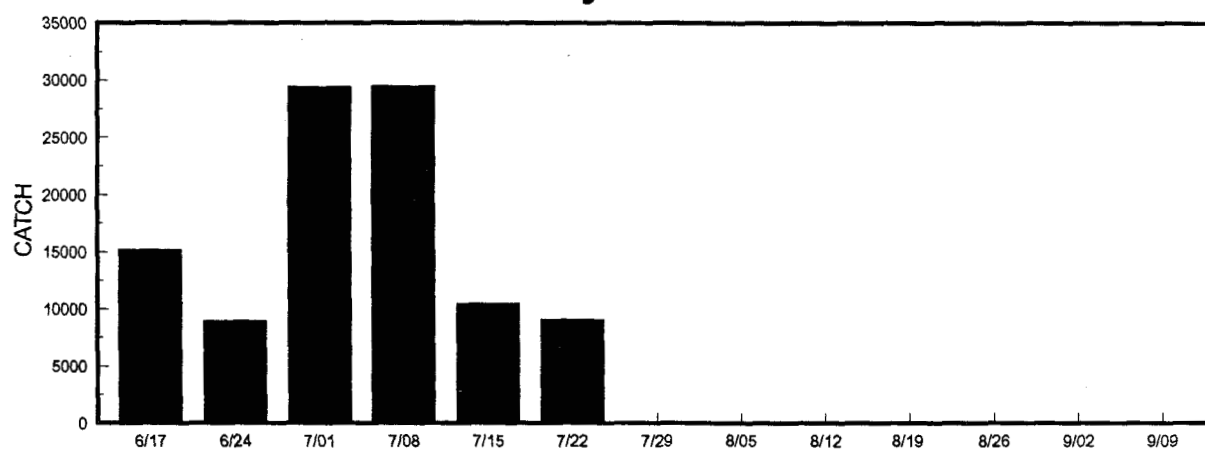


Figure 16. Weekly chum salmon catches from the major commercial common property purse seine and drift gillnet fisheries, Prince William Sound, 1989

## Northwestern District



## Eshamy District



## Southeastern District

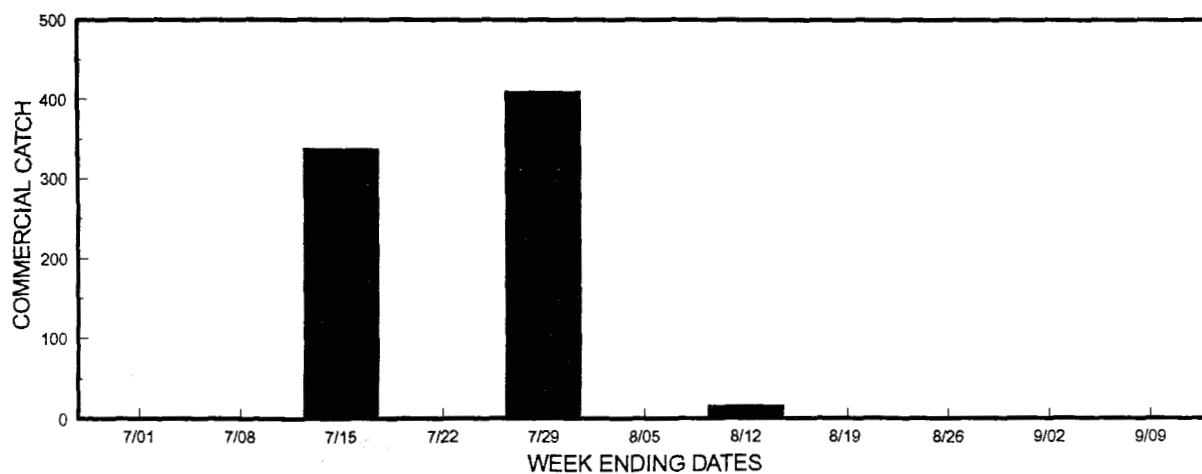
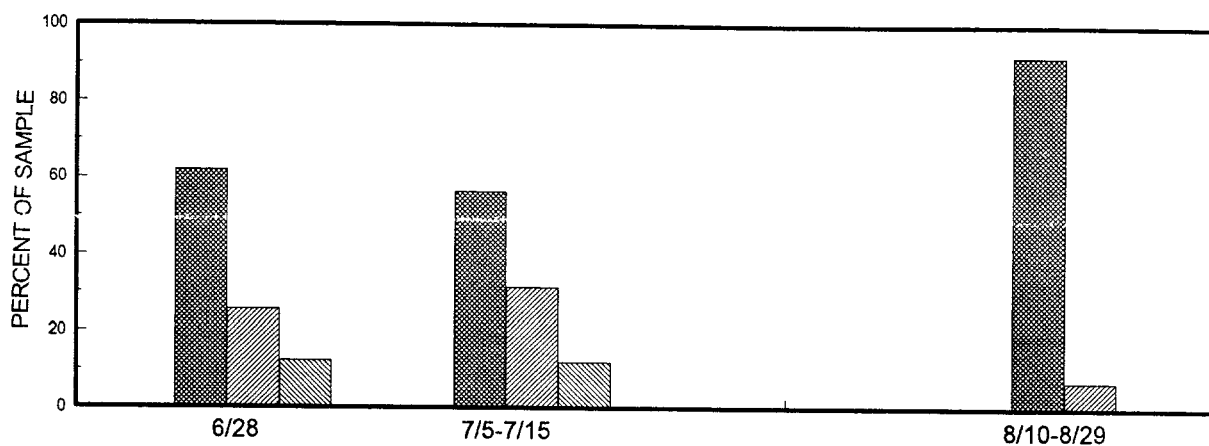
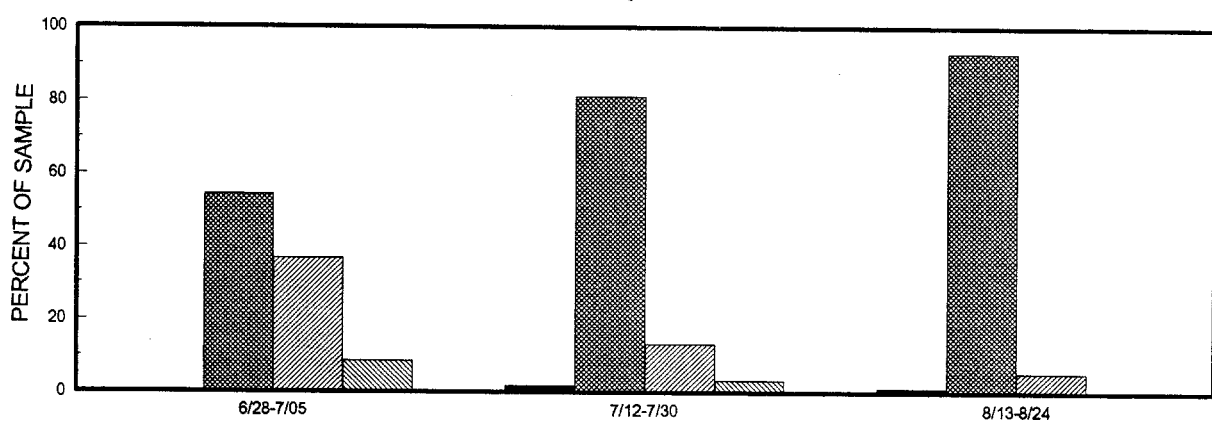


Figure 16. (Pg 2 of 2).

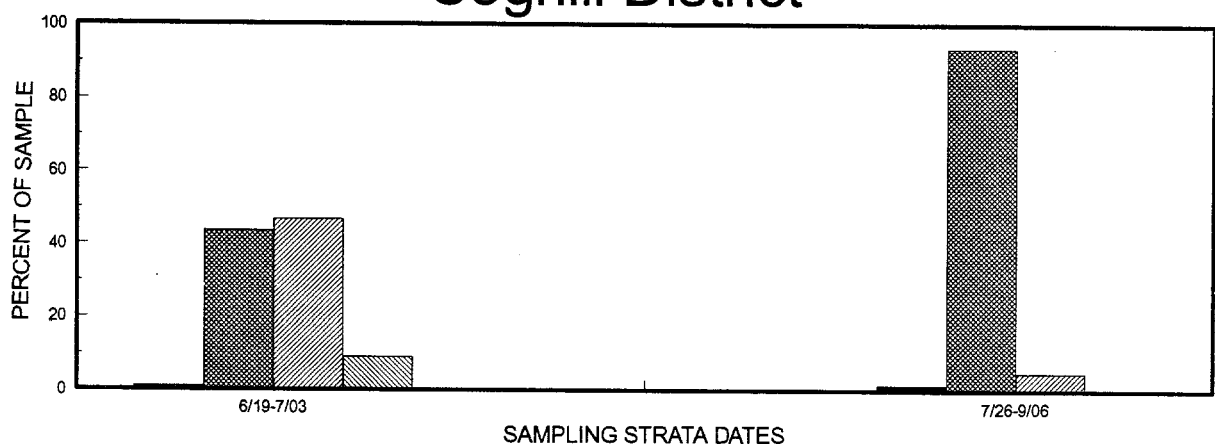
## Eastern District



## Northern District



## Coghill District



SAMPLING STRATA DATES

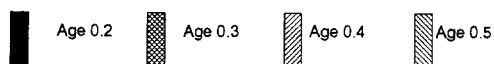
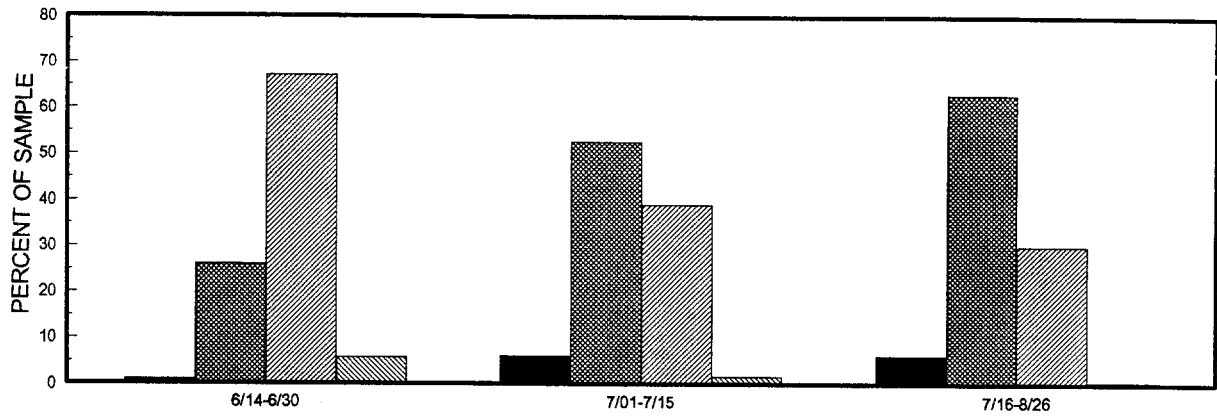
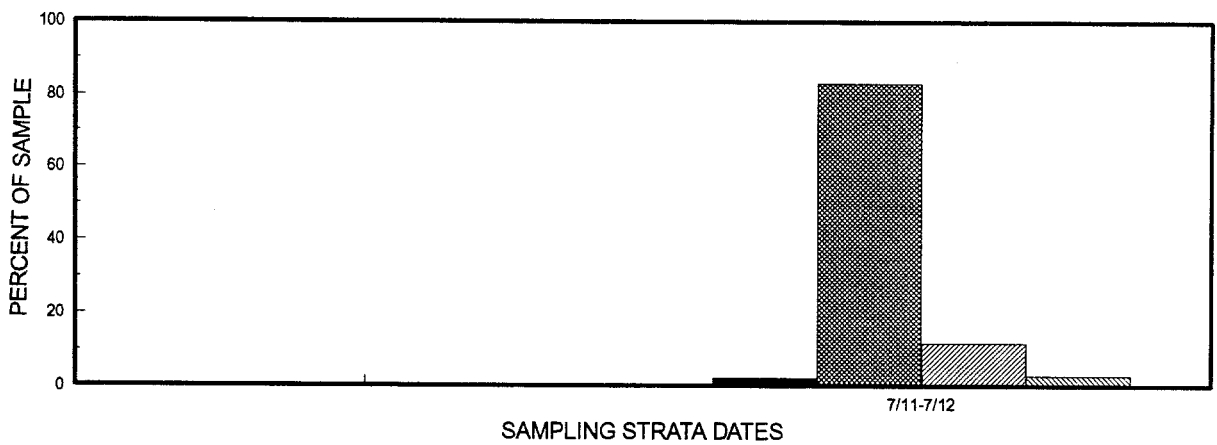


Figure 17. Temporally stratified age composition of sockeye salmon from the major commercial common property purse seine and drift gillnet fisheries and hatchery cost recovery fisheries, Prince William Sound, 1989

## Main Bay Hatchery Sales



## Southeastern District



Age 0.2
  Age 0.3
  Age 0.4
  Age 0.5

Figure 17. (Pg 2 of 2).

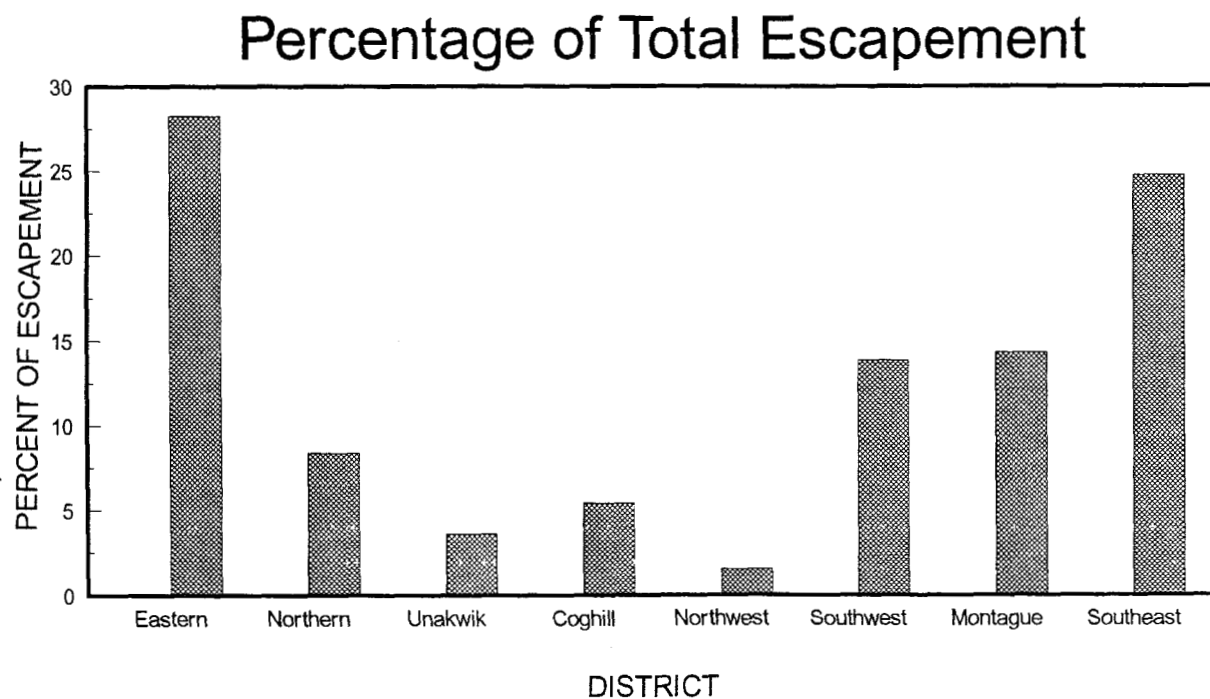
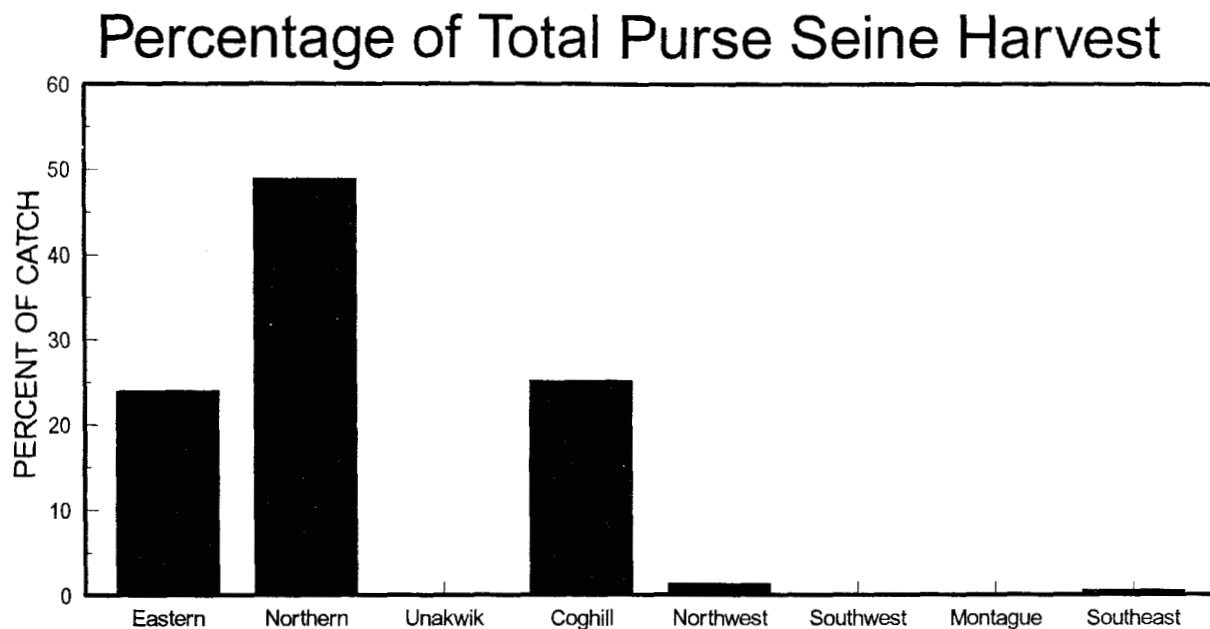
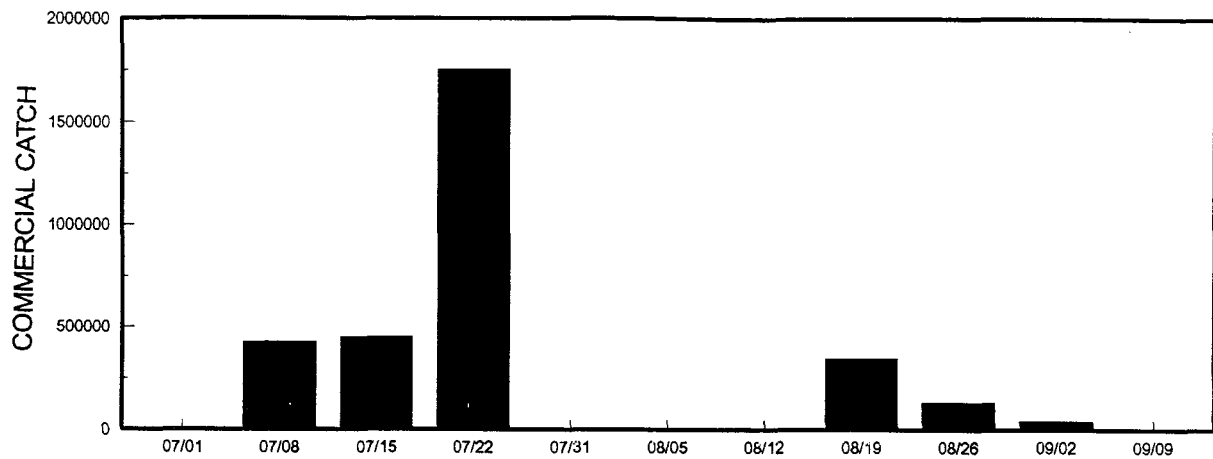
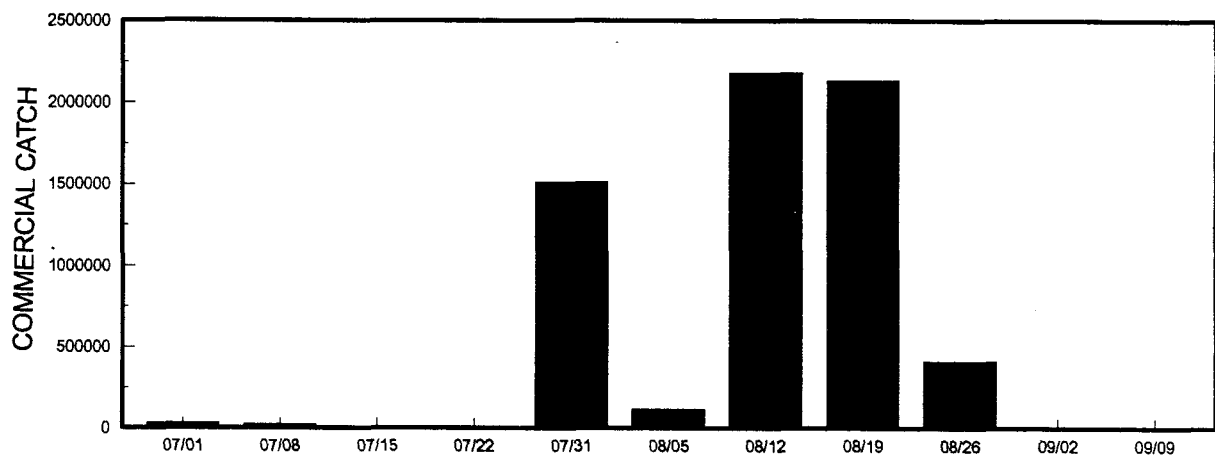


Figure 18. Percentage of the total commercial common property pink salmon purse seine catch, and the percentage of wild stock pink salmon escapements which occurred in the major purse seine districts in Prince William Sound, 1989.

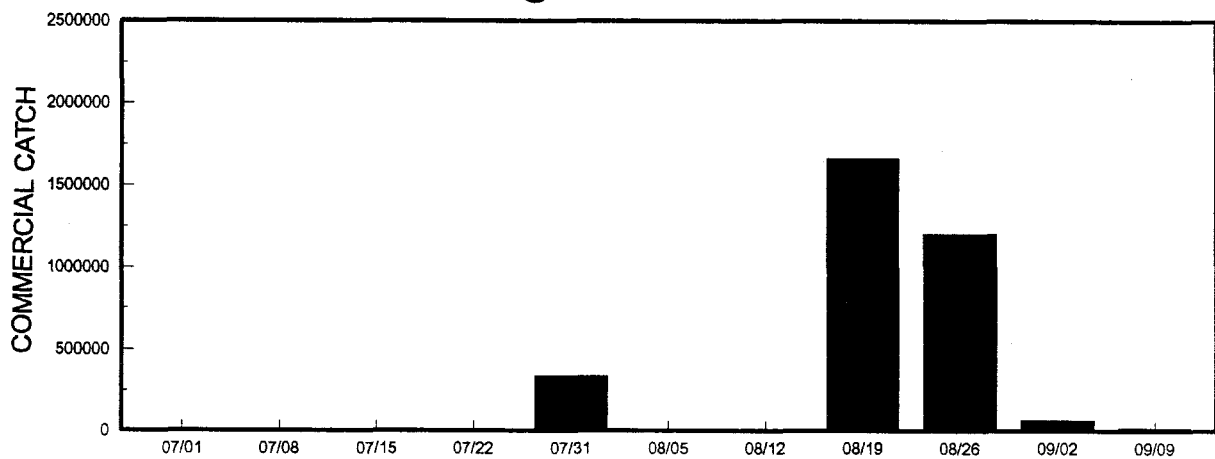
## Eastern District



## Northern District



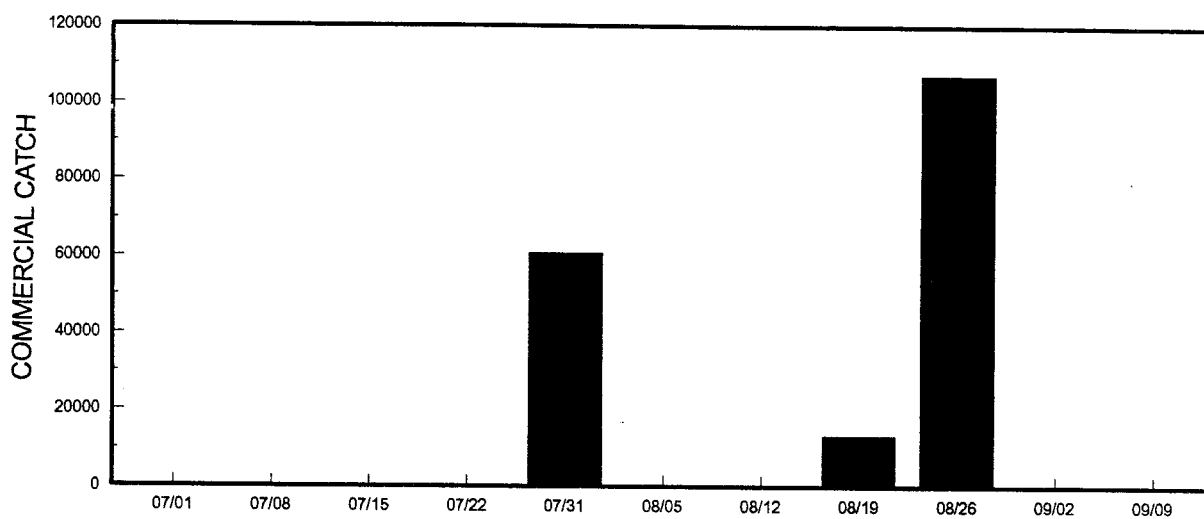
## Coghill District



WEEK ENDING DATES

Figure 19. Weekly commercial common property pink salmon catches from the major purse seine districts in Prince William Sound, 1989

## Northwestern District



## Southeastern District

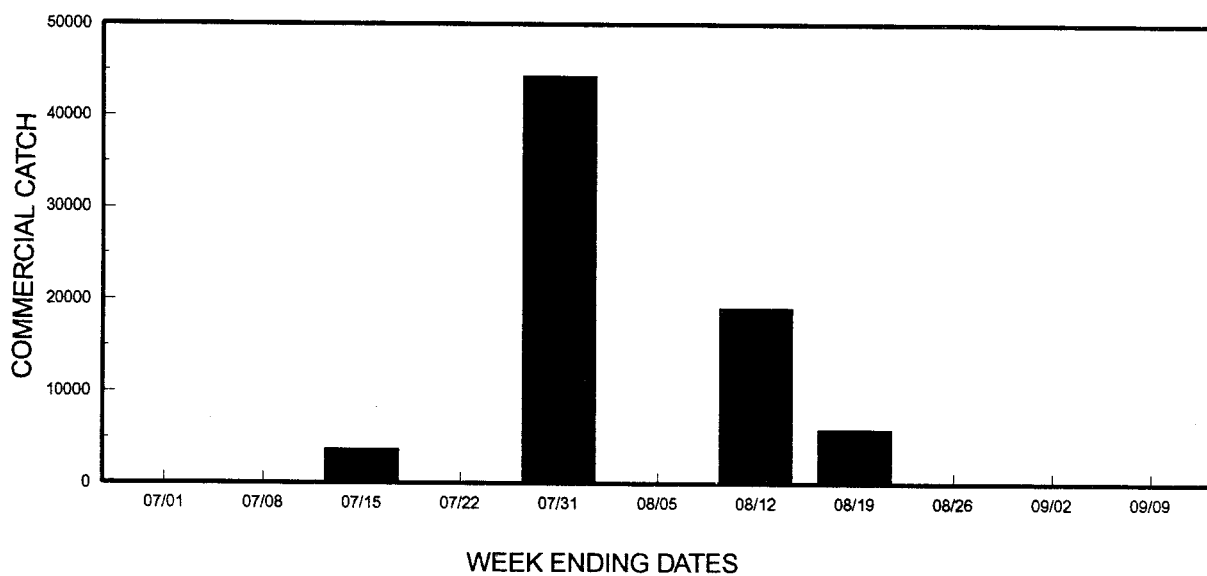


Figure 19. (Pg 2 of 2).

## **APPENDIX A**

Age and Sex Data for  
Commercial Salmon Catches from the  
Copper River and Bering Rivers  
(Districts 212 and 200)



Appendix A.1. Temporally stratified age and sex composition of sockeye salmon harvested in the Copper River District commercial common property drift gillnet fishery, 1989.

		Brood Year and Age Group										Total
		1986		1985		1984			1983		1982	
		0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	2.4	
Stratum Dates: 5/15-5/19 Sampling Dates: 5/16-5/17 Sample Size: 586												
Female	Percent of Sample	0.0	0.0	4.3	0.2	0.0	39.6	0.0	0.2	8.4	0.0	52.6
	Number in Catch	0	0	8,575	343	0	79,577	0	343	16,807	0	105,645
Male	Percent of Sample	0.0	0.0	3.9	0.0	0.0	35.7	0.0	0.2	7.5	0.2	47.4
	Number in Catch	0	0	7,889	0	0	71,688	0	343	15,092	343	95,355
Total	Percent of Sample	0.0	0.0	8.2	0.2	0.0	75.3	0.0	0.3	15.9	0.2	100.0
	Number in Catch	0	0	16,464	343	0	151,265	0	686	31,899	343	201,000
	Standard Error	0	0	2,279	343	0	3,586	0	485	3,037	343	
Stratum Dates: 5/22-5/27 Sampling Dates: 5/23-5/24 Sample Size: 564												
Female	Percent of Sample	0.0	0.0	3.9	0.7	0.0	35.5	0.0	0.0	5.0	0.0	45.0
	Number in Catch	0	0	10,232	1,860	0	93,016	0	0	13,022	0	118,130
Male	Percent of Sample	0.2	0.0	2.8	1.4	0.2	45.6	0.0	0.0	4.8	0.0	55.0
	Number in Catch	465	0	7,441	3,721	465	119,525	0	0	12,557	0	144,174
Total	Percent of Sample	0.2	0.0	6.7	2.1	0.2	81.0	0.0	0.0	9.8	0.0	100.0
	Number in Catch	465	0	17,673	5,581	465	212,541	0	0	25,579	0	262,304
	Standard Error	465	0	2,771	1,595	465	4,334	0	0	3,280	0	
Stratum Dates: 5/29-6/02 Sampling Dates: 5/30-5/31 Sample Size: 555												
Female	Percent of Sample	0.4	0.0	2.5	0.9	0.0	40.9	0.7	0.2	8.1	0.0	53.7
	Number in Catch	531	0	3,719	1,328	0	60,303	1,063	266	11,954	0	79,164
Male	Percent of Sample	1.4	0.0	2.2	4.0	0.2	31.9	0.4	0.0	5.8	0.2	45.9
	Number in Catch	2,125	0	3,188	5,844	266	47,020	531	0	8,501	266	67,741
Total	Percent of Sample	1.8	0.0	4.7	4.9	0.2	73.0	1.1	0.4	13.9	0.2	100.0
	Number in Catch	2,657	0	6,907	7,173	266	107,589	1,594	531	20,455	266	147,437
	Standard Error	833	0	1,324	1,348	266	2,782	648	375	2,165	266	

-Continued-

		Brood Year and Age Group										
		1986		1985		1984			1983		1982	
		0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	2.4	Total
Stratum Dates: 6/05-6/09												
Sampling Dates: 6/06-6/07												
Sample Size: 612												
Female	Percent of Sample	0.3	0.0	1.1	3.1	0.0	36.9	1.0	0.5	8.5	0.2	51.6
	Number in Catch	390	0	1,367	3,710	0	44,126	1,171	586	10,153	195	61,698
Male	Percent of Sample	0.5	0.0	0.2	6.5	0.0	32.5	0.2	0.2	8.2	0.2	48.4
	Number in Catch	586	0	195	7,810	0	38,854	195	195	9,762	195	57,794
Total	Percent of Sample	0.8	0.0	1.3	9.6	0.0	69.4	1.1	0.7	16.7	0.3	100.0
	Number in Catch	976	0	1,562	11,520	0	82,981	1,367	781	19,915	390	119,492
	Standard Error	435	0	549	1,427	0	2,227	514	390	1,802	276	
Stratum Dates: 6/12-6/16												
Sampling Dates: 6/13												
Sample Size: 608												
Female	Percent of Sample	0.3	0.0	1.0	1.6	0.0	44.2	0.2	0.2	4.9	0.0	52.5
	Number in Catch	285	0	855	1,426	0	38,348	143	143	4,277	0	45,476
Male	Percent of Sample	0.3	0.0	0.5	3.1	0.0	39.5	0.8	0.2	3.1	0.0	47.5
	Number in Catch	285	0	428	2,709	0	34,214	713	143	2,709	0	41,199
Total	Percent of Sample	0.7	0.0	1.5	4.8	0.0	83.7	1.0	0.3	8.1	0.0	100.0
	Number in Catch	570	0	1,283	4,134	0	72,562	855	285	6,985	0	86,675
	Standard Error	284	0	425	750	0	1,299	348	201	958	0	
Stratum Dates: 6/19-6/27												
Sampling Dates: 6/24												
Sample Size: 608												
Female	Percent of Sample	0.3	0.0	1.8	3.1	0.0	40.3	0.0	0.0	1.8	0.0	47.4
	Number in Catch	281	0	1,543	2,665	0	34,369	0	0	1,543	0	40,401
Male	Percent of Sample	0.7	0.3	1.0	8.1	0.0	40.0	0.3	0.2	2.1	0.0	52.6
	Number in Catch	561	281	842	6,874	0	34,088	281	140	1,824	0	44,890
Total	Percent of Sample	1.0	0.3	2.8	11.2	0.0	80.3	0.3	0.2	3.9	0.0	100.0
	Number in Catch	842	281	2,385	9,539	0	68,457	281	140	3,367	0	85,291
	Standard Error	342	198	571	1,091	0	1,378	198	140	674	0	

-Continued-

		Brood Year and Age Group										
		1986		1985		1984			1983		1982	
		0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	2.4	Total
Stratum Dates: 7/03-7/11												
Sampling Dates: 7/11												
Sample Size: 588												
Female	Percent of Sample	0.3	0.0	0.9	4.4	0.0	30.8	1.2	0.0	8.2	0.0	45.7
	Number in Catch	209	0	522	2,713	0	18,886	730	0	5,009	0	28,069
Male	Percent of Sample	0.5	0.2	0.5	9.2	0.0	34.9	1.7	0.0	7.3	0.0	54.3
	Number in Catch	313	104	313	5,635	0	21,391	1,043	0	4,487	0	33,286
Total	Percent of Sample	0.9	0.2	1.4	13.6	0.0	65.6	2.9	0.0	15.5	0.0	100.0
	Number in Catch	522	104	835	8,348	0	40,277	1,774	0	9,495	0	61,355
	Standard Error	233	104	293	868	0	1,203	424	0	916	0	
Stratum Dates: 7/17-9/23												
Sampling Dates: 7/25												
Sample Size: 563												
Female	Percent of Sample	0.2	0.0	0.4	7.3	0.0	41.4	2.3	0.0	6.4	0.0	57.9
	Number in Catch	111	0	222	4,542	0	25,812	1,440	0	3,988	0	36,114
Male	Percent of Sample	0.0	0.4	0.9	8.3	0.0	25.4	2.7	0.0	4.3	0.0	41.9
	Number in Catch	0	222	554	5,207	0	15,842	1,662	0	2,659	0	26,144
Total	Percent of Sample	0.2	0.4	1.2	15.6	0.0	66.8	5.0	0.0	10.8	0.0	100.0
	Number in Catch	111	222	775	9,749	0	41,653	3,102	0	6,758	0	62,369
	Standard Error	111	157	292	955	0	1,239	572	0	818	0	
Strata Combined: 5/15-9/23												
Sampling Dates: 5/16-7/25												
Sample Size: 4,684												
Female	Percent of Sample	0.2	0.0	2.6	1.8	0.0	38.4	0.4	0.1	6.5	0.0	50.2
	Number in Catch	1,807	0	27,034	18,587	0	394,437	4,547	1,337	66,753	195	514,698
Male	Percent of Sample	0.4	0.1	2.0	3.7	0.1	37.3	0.4	0.1	5.6	0.1	49.8
	Number in Catch	4,335	606	20,850	37,799	731	382,622	4,425	821	57,590	804	510,583
Total	Percent of Sample	0.6	0.1	4.7	5.5	0.1	75.8	0.9	0.2	12.1	0.1	100.0
	Number in Catch	6,142	606	47,884	56,386	731	777,324	8,972	2,424	124,454	999	1,025,923
	Standard Error	1,168	273	3,950	3,152	536	7,135	1,162	767	5,549	514	

Appendix A.2. Estimated age and sex composition of sockeye salmon harvested in the Bering River District commercial common property drift gillnet fishery, 1989.

		Brood Year and Age Group							
		1986		1985		1984		1983	
		0.2	1.1	0.3	1.2	1.3	2.2	2.3	Total
Stratum Dates: 6/19-9/02									
Sampling Dates: 6/20									
Sample Size: 593									
Female	Percent of Sample	1.0	0.0	0.3	6.1	30.0	0.0	4.4	41.8
	Number in Catch	93	0	31	560	2,769	0	404	3,858
Male	Percent of Sample	1.7	0.5	0.3	11.1	38.8	1.0	4.7	58.2
	Number in Catch	156	47	31	1,027	3,578	93	436	5,367
Total	Percent of Sample	2.7	0.5	0.7	17.2	68.8	1.0	9.1	100.0
	Number in Catch	249	47	62	1,587	6,347	93	840	9,225
	Standard Error	61	27	31	143	176	38	109	

Appendix A.3. Temporally stratified age and sex composition of chinook salmon harvested in the Copper River District commercial common property drift gillnet fishery, 1989.

		Brood Year and Age Group										
		1986	1985		1984			1983		1982		
		1.1	1.2	2.1	0.4	1.3	2.2	1.4	2.3	1.5	2.4	Total
Stratum Dates: 05/15 - 05/19 Sampling Dates: 05/16 - 06/03 Sample Size: 498												
Female	Percent of Sample Number in Catch	0.0 0	0.0 0	0.0 0	0.2 14	10.6 748	0.0 0	26.7 1,876	1.8 127	0.4 28	3.8 268	43.6 3,061
Male	Percent of Sample Number in Catch	0.0 0	0.8 56	0.0 0	0.0 0	8.8 621	0.0 0	36.9 2,596	0.8 56	3.6 254	5.4 381	56.4 3,964
Total	Percent of Sample Number in Catch Standard Error	0.0 0 0	0.8 56 28	0.0 0 0	0.2 14 14	19.5 1,368 125	0.0 0 0	63.7 4,472 152	2.6 183 50	4.0 282 62	9.2 649 91	100.0 7,025
Stratum Dates: 05/22 - 06/02 Sampling Dates: 05/27 - 06/10 Sample Size: 540												
Female	Percent of Sample Number in Catch	0.0 0	0.9 141	0.0 0	0.0 0	14.3 2,176	0.0 0	26.1 3,984	1.5 226	0.4 57	1.9 283	45.0 6,866
Male	Percent of Sample Number in Catch	0.2 28	2.8 424	0.2 28	0.0 0	12.2 1,865	0.4 57	34.8 5,312	0.6 85	1.5 226	2.0 311	54.6 8,335
Total	Percent of Sample Number in Catch Standard Error	0.2 28 28	3.7 565 124	0.2 28 28	0.0 0 0	26.5 4,040 290	0.4 57 40	61.3 9,352 320	2.0 311 93	1.9 283 89	3.9 593 127	100.0 15,257
Stratum Dates: 06/05 - 08/23 Sampling Dates: 06/09 - 06/10 Sample Size: 507												
Female	Percent of Sample Number in Catch	0.0 0	0.8 68	0.0 0	0.0 0	12.2 1,049	0.0 0	29.8 2,556	1.4 118	1.0 85	3.7 322	48.9 4,197
Male	Percent of Sample Number in Catch	0.2 17	1.2 102	0.4 34	0.0 0	13.0 1,117	0.0 0	31.0 2,657	1.0 85	1.4 118	3.0 254	51.1 4,384
Total	Percent of Sample Number in Catch Standard Error	0.2 17 17	2.0 169 53	0.4 34 24	0.0 0 0	25.2 2,166 166	0.0 0 0	60.7 5,213 186	2.4 203 58	2.4 203 58	6.7 575 95	100.0 8,581
Strata Combined: 05/15 - 08/23 Sampling Dates: 05/16 - 06/10 Sample Size: 1,545												
Female	Percent of Sample Number in Catch	0.0 0	0.7 209	0.0 0	0.0 14	12.9 3,973	0.0 0	27.3 8,416	1.5 471	0.5 169	2.8 872	45.8 14,124
Male	Percent of Sample Number in Catch	0.1 45	1.9 582	0.2 62	0.0 0	11.7 3,602	0.2 57	34.2 10,565	0.7 226	1.9 598	3.1 946	54.1 16,682
Total	Percent of Sample Number in Catch Standard Error	0.1 45 33	2.6 791 138	0.2 62 37	0.0 14 14	24.5 7,575 357	0.2 57 40	61.7 19,037 400	2.3 697 120	2.5 768 123	5.9 1,818 183	100.0 30,863

Appendix A.4. Temporally stratified age and sex composition of coho salmon harvested in the Copper River District commercial common property drift gillnet fishery, 1989.

		Brood Year and Age Group			Total
		1986	1985	1984	
		1.1	2.1	3.1	
Stratum Dates: 6/08–8/16					
Sampling Dates: 8/06–8/09					
Sample Size: 415					
Female	Percent of Sample	7.2	7.0	0.5	14.7
	Number in Catch	2,876	2,780	192	5,848
Male	Percent of Sample	36.6	47.0	1.7	85.3
	Number in Catch	14,572	18,694	671	33,937
Total	Percent of Sample	43.9	54.0	2.2	100.0
	Number in Catch	17,448	21,474	863	39,785
	Standard Error	970	975	285	
Stratum Dates: 8/21–9/02					
Sampling Dates: 8/23					
Sample Size: 409					
Female	Percent of Sample	15.9	17.4	0.0	33.3
	Number in Catch	11,302	12,345	0	23,646
Male	Percent of Sample	36.2	30.6	0.0	66.7
	Number in Catch	25,733	21,734	0	47,467
Total	Percent of Sample	52.1	47.9	0.0	100.0
	Number in Catch	37,034	34,079	0	71,113
	Standard Error	1,759	1,759	0	
Stratum Dates: 9/11–9/30					
Sampling Dates: 9/12					
Sample Size: 381					
Female	Percent of Sample	29.4	26.2	0.5	56.2
	Number in Catch	24,562	21,931	439	46,932
Male	Percent of Sample	26.0	17.8	0.0	43.8
	Number in Catch	21,711	14,913	0	36,624
Total	Percent of Sample	55.4	44.1	0.5	100.0
	Number in Catch	46,274	36,844	439	83,556
	Standard Error	2,131	2,128	310	
Strata Combined: 6/08–9/30					
Sampling Dates: 8/06–9/12					
Sample Size: 1,205					
Female	Percent of Sample	19.9	19.1	0.3	39.3
	Number in Catch	38,740	37,056	630	76,426
Male	Percent of Sample	31.9	28.5	0.3	60.7
	Number in Catch	62,016	55,341	671	118,028
Total	Percent of Sample	51.8	47.5	0.7	100.0
	Number in Catch	100,756	92,397	1,301	194,454
	Standard Error	2,928	2,928	421	

Appendix A.5. Temporally stratified age and sex composition of coho salmon harvested in the Bering River District commercial common property drift gillnet fishery, 1989.

		Brood Year and Age Group				
		1986	1985	1984		
		1.1	2.1	2.2	3.1	Total
<hr/>						
Stratum Dates:		6/19–9/02				
Sampling Dates:		8/24				
Sample Size:		352				
Female	Percent of Sample	9.9	20.5	0.0	0.3	30.7
	Number in Catch	830	1,708	0	24	2,563
Male	Percent of Sample	29.8	38.1	0.3	0.9	69.0
	Number in Catch	2,491	3,179	24	71	5,766
Total	Percent of Sample	39.8	58.8	0.3	1.1	100.0
	Number in Catch	3,322	4,912	24	95	8,352
	Standard Error	218	219	24	47	
<hr/>						
Stratum Dates:		9/11–9/30				
Sampling Dates:		9/14				
Sample Size:		370				
Female	Percent of Sample	20.0	32.7	0.0	0.5	53.2
	Number in Catch	3,720	6,083	0	101	9,903
Male	Percent of Sample	19.2	27.6	0.0	0.0	46.8
	Number in Catch	3,569	5,128	0	0	8,697
Total	Percent of Sample	39.2	60.3	0.0	0.5	100.0
	Number in Catch	7,289	11,210	0	101	18,600
	Standard Error	473	474	0	71	
<hr/>						
Strata Combined:		6/19–9/30				
Sampling Dates:		8/24,9/14				
Sample Size:		722				
Female	Percent of Sample	16.9	28.9	0.0	0.5	46.3
	Number in Catch	4,550	7,791	0	124	12,466
Male	Percent of Sample	22.5	30.8	0.1	0.3	53.7
	Number in Catch	6,061	8,307	24	71	14,462
Total	Percent of Sample	39.4	59.8	0.1	0.7	100.0
	Number in Catch	10,611	16,122	24	195	26,952
	Standard Error	521	522	24	85	

## **APPENDIX B**

Subsistence, Personal Use, and Sport Fish Salmon Catches  
from the Upper Copper River.



Appendix B.1. Daily catches of sockeye, chinook, and coho salmon in the subsistence and personal use fisheries on the Upper Copper River, 1989. This table does not include catches reported with erroneous or missing dates.

Date	Personal Use Catch						Subsistence Catch						Combined Catches					
	Sockeye		Chinook		Coho		Sockeye		Chinook		Coho		Sockeye		Chinook		Coho	
	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.
01-Jun	27	27	0	0	0	0	102	102	2	2	0	0	129	129	2	2	0	0
02-Jun	1044	1071	59	59	0	0	267	369	5	7	5	5	1311	1440	64	66	5	5
03-Jun	2780	3851	164	223	0	0	225	594	4	11	0	5	3005	4445	168	234	0	5
04-Jun	1748	5599	103	326	0	0	195	789	6	17	0	5	1943	6388	109	343	0	5
05-Jun	47	5646	3	329	0	0	344	1133	17	34	0	5	391	6779	20	363	0	5
06-Jun	26	5672	5	334	0	0	386	1519	10	44	0	5	412	7191	15	378	0	5
07-Jun	4	5676	0	334	0	0	221	1740	9	53	0	5	225	7416	9	387	0	5
08-Jun	332	6008	13	347	0	0	424	2164	4	57	0	5	756	8172	17	404	0	5
09-Jun	1729	7737	85	432	0	0	283	2447	13	70	0	5	2012	10184	98	502	0	5
10-Jun	3264	11001	263	695	0	0	860	3307	17	87	0	5	4124	14308	280	782	0	5
11-Jun	2014	13015	164	859	0	0	201	3508	14	101	0	5	2215	16523	178	960	0	5
12-Jun	17	13032	3	862	0	0	298	3806	5	106	0	5	315	16838	8	968	0	5
13-Jun	352	13384	19	881	0	0	606	4412	8	114	0	5	958	17796	27	995	0	5
14-Jun	323	13707	18	899	0	0	549	4961	5	119	0	5	872	18668	23	1018	0	5
15-Jun	597	14304	43	942	0	0	1076	6037	19	138	0	5	1673	20341	62	1080	0	5
16-Jun	798	15102	84	1026	0	0	236	6273	8	146	0	5	1034	21375	92	1172	0	5
17-Jun	1126	16228	93	1119	0	0	486	6759	15	161	0	5	1612	22987	108	1280	0	5
18-Jun	1329	17557	78	1197	0	0	310	7069	9	170	0	5	1639	24626	87	1367	0	5
19-Jun	200	17757	9	1206	0	0	408	7477	14	184	0	5	608	25234	23	1390	0	5
20-Jun	500	18257	31	1237	0	0	680	8157	29	213	0	5	1180	26414	60	1450	0	5
21-Jun	435	18692	22	1259	0	0	475	8632	13	226	0	5	910	27324	35	1485	0	5
22-Jun	656	19348	38	1297	0	0	361	8993	9	235	0	5	1017	28341	47	1532	0	5
23-Jun	716	20064	56	1353	0	0	114	9107	0	235	0	5	830	29171	56	1588	0	5
24-Jun	692	20756	69	1422	0	0	220	9327	7	242	0	5	912	30083	76	1664	0	5
25-Jun	168	20924	16	1438	0	0	283	9610	24	266	0	5	451	30534	40	1704	0	5
26-Jun	68	20992	7	1445	0	0	301	9911	9	275	0	5	369	30903	16	1720	0	5
27-Jun	367	21359	23	1468	0	0	206	10117	15	290	0	5	573	31476	38	1758	0	5
28-Jun	567	21926	33	1501	0	0	344	10461	12	302	0	5	911	32387	45	1803	0	5
29-Jun	469	22395	22	1523	0	0	227	10688	18	320	0	5	696	33083	40	1843	0	5
30-Jun	667	23062	45	1568	0	0	955	11643	25	345	0	5	1622	34705	70	1913	0	5

-Continued-

Date	Personal Use Catch						Subsistence Catch						Combined Catches					
	Sockeye		Chinook		Coho		Sockeye		Chinook		Coho		Sockeye		Chinook		Coho	
	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.
01-Jul	877	23939	43	1611	0	0	237	11880	10	355	0	5	1114	35819	53	1966	0	5
02-Jul	579	24518	45	1656	0	0	525	12405	41	396	0	5	1104	36923	86	2052	0	5
03-Jul	397	24915	34	1690	0	0	209	12614	27	423	0	5	606	37529	61	2113	0	5
04-Jul	319	25234	20	1710	0	0	268	12882	19	442	0	5	587	38116	39	2152	0	5
05-Jul	200	25434	15	1725	0	0	295	13177	5	447	0	5	495	38611	20	2172	0	5
06-Jul	509	25943	28	1753	0	0	285	13462	14	461	0	5	794	39405	42	2214	0	5
07-Jul	500	26443	24	1777	0	0	311	13773	14	475	0	5	811	40216	38	2252	0	5
08-Jul	767	27210	42	1819	0	0	278	14051	20	495	0	5	1045	41261	62	2314	0	5
09-Jul	716	27926	48	1867	0	0	92	14143	16	511	0	5	808	42069	64	2378	0	5
10-Jul	127	28053	6	1873	0	0	491	14634	18	529	0	5	618	42687	24	2402	0	5
11-Jul	251	28304	4	1877	0	0	206	14840	3	532	0	5	457	43144	7	2409	0	5
12-Jul	110	28414	4	1881	0	0	310	15150	13	545	0	5	420	43564	17	2426	0	5
13-Jul	46	28460	3	1884	0	0	163	15313	7	552	0	5	209	43773	10	2436	0	5
14-Jul	181	28641	16	1900	0	0	318	15631	21	573	0	5	499	44272	37	2473	0	5
15-Jul	316	28957	40	1940	0	0	632	16263	15	588	0	5	948	45220	55	2528	0	5
16-Jul	422	29379	48	1988	0	0	196	16459	19	607	0	5	618	45838	67	2595	0	5
17-Jul	277	29656	15	2003	0	0	275	16734	9	616	0	5	552	46390	24	2619	0	5
18-Jul	756	30412	8	2011	0	0	278	17012	5	621	0	5	1034	47424	13	2632	0	5
19-Jul	455	30867	4	2015	0	0	254	17266	7	628	0	5	709	48133	11	2643	0	5
20-Jul	1138	32005	23	2038	0	0	524	17790	6	634	0	5	1662	49795	29	2672	0	5
21-Jul	562	32567	7	2045	0	0	316	18106	12	646	0	5	878	50673	19	2691	0	5
22-Jul	1220	33787	28	2073	0	0	472	18578	15	661	0	5	1692	52365	43	2734	0	5
23-Jul	658	34445	5	2078	0	0	113	18691	1	662	0	5	771	53136	6	2740	0	5
24-Jul	586	35031	5	2081	0	0	297	18988	6	668	0	5	883	54019	9	2749	0	5
25-Jul	984	36015	13	2094	0	0	545	19533	4	672	0	5	1529	55548	17	2766	0	5
26-Jul	749	36764	2	2096	0	0	388	19921	3	675	0	5	1137	56685	5	2771	0	5
27-Jul	572	37336	10	2106	0	0	339	20260	4	679	0	5	911	57596	14	2785	0	5
28-Jul	925	38261	4	2110	0	0	198	20458	0	679	0	5	1123	58719	4	2789	0	5
29-Jul	1665	39926	9	2119	0	0	237	20695	1	680	0	5	1902	60621	10	2799	0	5
30-Jul	744	40670	3	2122	0	0	439	21134	11	691	0	5	1183	61804	14	2813	0	5
31-Jul	309	40979	2	2124	0	0	384	21518	13	704	0	5	693	62497	15	2828	0	5

-Continued-

Date	Personal Use Catch						Subsistence Catch						Combined Catches					
	Sockeye		Chinook		Coho		Sockeye		Chinook		Coho		Sockeye		Chinook		Coho	
	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.
01-Aug	259	41238	0	2124	0	0	112	21630	2	706	0	5	371	62868	2	2830	0	5
02-Aug	146	41384	2	2126	0	0	99	21729	1	707	0	5	245	63113	3	2833	0	5
03-Aug	295	41679	5	2131	0	0	132	21861	3	710	0	5	427	63540	8	2841	0	5
04-Aug	636	42315	0	2131	0	0	152	22013	0	710	0	5	788	64328	0	2841	0	5
05-Aug	946	43261	4	2135	0	0	345	22358	3	713	0	5	1291	65619	7	2848	0	5
06-Aug	879	44140	1	2136	0	0	72	22430	0	713	0	5	951	66570	1	2849	0	5
07-Aug	540	44680	1	2137	0	0	178	22608	3	716	0	5	718	67288	4	2853	0	5
08-Aug	434	45114	0	2137	0	0	132	22740	0	716	0	5	566	67854	0	2853	0	5
09-Aug	168	45282	0	2137	0	0	233	22973	4	720	0	5	401	68255	4	2857	0	5
10-Aug	565	45847	0	2137	0	0	306	23279	0	720	0	5	871	69126	0	2857	0	5
11-Aug	599	46446	3	2140	0	0	241	23520	5	725	0	5	840	69966	8	2865	0	5
12-Aug	824	47270	2	2142	0	0	63	23583	1	726	0	5	887	70853	3	2868	0	5
13-Aug	401	47671	0	2142	0	0	88	23671	0	726	0	5	489	71342	0	2868	0	5
14-Aug	160	47831	0	2142	0	0	254	23925	6	732	0	5	414	71756	6	2874	0	5
15-Aug	292	48123	0	2142	0	0	340	24265	0	732	4	9	632	72388	0	2874	4	9
16-Aug	268	48391	0	2142	0	0	272	24537	0	732	0	9	540	72928	0	2874	0	9
17-Aug	450	48841	6	2148	3	3	398	24935	0	732	0	9	848	73776	6	2880	3	12
18-Aug	424	49265	0	2148	0	3	350	25285	0	732	0	9	774	74550	0	2880	0	12
19-Aug	713	49978	0	2148	0	3	111	25396	0	732	0	9	824	75374	0	2880	0	12
20-Aug	309	50287	0	2148	1	4	131	25527	0	732	0	9	440	75814	0	2880	1	13
21-Aug	185	50472	0	2148	3	7	49	25576	1	733	0	9	234	76048	1	2881	3	16
22-Aug	424	50896	1	2149	30	37	314	25890	0	733	0	9	738	76786	1	2882	30	46
23-Aug	129	51025	0	2149	10	47	71	25961	5	738	0	9	200	76986	5	2887	10	56
24-Aug	203	51228	0	2149	5	52	15	25976	0	738	0	9	218	77204	0	2887	5	61
25-Aug	272	51500	2	2151	4	56	31	26007	0	738	1	10	303	77507	2	2889	5	66
26-Aug	344	51844	0	2151	9	65	2	26009	0	738	0	10	346	77853	0	2889	9	75
27-Aug	228	52072	0	2151	8	73	8	26017	0	738	0	10	236	78089	0	2889	8	83
28-Aug	77	52149	0	2151	4	77	113	26130	2	740	0	10	190	78279	2	2891	4	87
29-Aug	163	52312	3	2154	16	93	5	26135	0	740	0	10	168	78447	3	2894	16	103
30-Aug	165	52477	0	2154	20	113	224	26359	4	744	0	10	389	78836	4	2898	20	123
31-Aug	132	52609	0	2154	23	136	19	26378	0	744	0	10	151	78987	0	2898	23	146

-Continued-

Date	Personal Use Catch						Subsistence Catch						Combined Catches					
	Sockeye		Chinook		Coho		Sockeye		Chinook		Coho		Sockeye		Chinook		Coho	
	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.	Daily	Cumm.
01-Sep	132	52741	0	2154	16	152	0	26378	0	744	0	10	132	79119	0	2898	16	162
02-Sep	251	52992	3	2157	137	289	0	26378	0	744	0	10	251	79370	3	2901	137	299
03-Sep	111	53103	0	2157	77	366	0	26378	0	744	0	10	111	79481	0	2901	77	376
04-Sep	19	53122	0	2157	15	381	0	26378	0	744	0	10	19	79500	0	2901	15	391
05-Sep	29	53151	0	2157	16	397	20	26398	0	744	0	10	49	79549	0	2901	16	407
06-Sep	25	53176	0	2157	2	399	38	26436	0	744	4	14	63	79612	0	2901	6	413
07-Sep	1	53177	0	2157	3	402	29	26465	0	744	0	14	30	79642	0	2901	3	416
08-Sep	22	53199	0	2157	41	443	9	26474	0	744	0	14	31	79673	0	2901	41	457
09-Sep	20	53219	0	2157	32	475	0	26474	0	744	0	14	20	79693	0	2901	32	489
10-Sep	20	53239	0	2157	53	528	120	26594	0	744	0	14	140	79833	0	2901	53	542
11-Sep	10	53249	0	2157	10	538	2	26596	0	744	14	28	12	79845	0	2901	24	566
12-Sep	6	53255	0	2157	33	571	4	26600	0	744	5	33	10	79855	0	2901	38	604
13-Sep	19	53274	0	2157	2	573	5	26605	0	744	19	52	24	79879	0	2901	21	625
14-Sep	22	53296	0	2157	28	601	0	26605	0	744	0	52	22	79901	0	2901	28	653
15-Sep	48	53344	3	2160	48	649	30	26635	0	744	0	52	78	79979	3	2904	48	701
16-Sep	21	53365	0	2160	56	705	0	26635	0	744	0	52	21	80000	0	2904	56	757
17-Sep	16	53381	0	2160	66	771	0	26635	0	744	2	54	16	80016	0	2904	68	825
18-Sep	0	53381	0	2160	0	771	1	26636	0	744	8	62	1	80017	0	2904	8	833
19-Sep	0	53381	0	2160	16	787	24	26660	0	744	8	70	24	80041	0	2904	24	857
20-Sep	0	53381	0	2160	0	787	11	26671	0	744	0	70	11	80052	0	2904	0	857
21-Sep	73	53454	0	2160	12	799	0	26671	0	744	0	70	73	80125	0	2904	12	869
22-Sep	11	53465	0	2160	16	815	0	26671	0	744	0	70	11	80136	0	2904	16	885
23-Sep	0	53465	0	2160	6	821	0	26671	0	744	0	70	0	80136	0	2904	6	891
24-Sep	0	53465	0	2160	0	821	5	26676	0	744	0	70	5	80141	0	2904	0	891
25-Sep	0	53465	0	2160	0	821	0	26676	0	744	0	70	0	80141	0	2904	0	891
26-Sep	0	53465	0	2160	0	821	0	26676	0	744	0	70	0	80141	0	2904	0	891
27-Sep	0	53465	0	2160	0	821	0	26676	0	744	0	70	0	80141	0	2904	0	891
28-Sep	0	53465	0	2160	0	821	2	26678	0	744	0	70	2	80143	0	2904	0	891
29-Sep	0	53465	0	2160	2	823	0	26678	0	744	0	70	0	80143	0	2904	2	893
30-Sep	40	53505	0	2160	2	825	38	26716	0	744	0	70	78	80221	0	2904	2	895
Total	53505		2160		825		26716		744		70		80221		2904		895	

Appendix B.2. Temporally stratified age and sex composition of sockeye salmon harvested in upper Copper River personal use and subsistence fisheries, 1989.

		Brood Year and Age Group										
		1987	1986		1985			1984		1983		
		0.1	0.2	1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3	Total
Stratum Dates: 6/1–7/14												
Sampling Dates: 6/2–7/9												
Sample Size: 1,261												
Female	Percent of Sample	0.0	0.2	0.0	0.4	5.2	0.1	33.0	0.9	0.1	2.6	42.4
	Number in Catch	0	91	0	170	2,290	28	14,606	400	57	1,152	18,793
Male	Percent of Sample	0.0	0.0	0.1	0.7	7.2	0.0	44.1	0.8	0.1	2.3	55.4
	Number in Catch	0	0	63	311	3,205	0	19,535	372	28	1,026	24,540
Total	Percent of Sample	0.0	0.2	0.1	1.1	13.0	0.1	78.7	1.7	0.2	4.9	100.0
	Number in Catch	0	91	63	481	5,747	28	34,827	772	85	2,178	44,272
	Standard Error	0	69	63	116	457	28	564	206	49	319	
Stratum Dates: 7/15–9/30												
Sampling Dates: 7/16–7/30												
Sample Size: 445												
Female	Percent of Sample	0.0	0.0	0.2	0.2	20.8	0.0	21.3	0.0	0.0	0.2	42.7
	Number in Catch	0	0	83	83	7,466	0	7,653	0	0	83	15,368
Male	Percent of Sample	0.2	0.2	1.8	0.0	33.3	0.0	21.2	0.0	0.0	0.0	56.8
	Number in Catch	83	83	659	0	11,971	0	7,623	0	0	0	20,418
Total	Percent of Sample	0.2	0.2	2.1	0.2	54.3	0.0	42.7	0.0	0.0	0.2	100.0
	Number in Catch	83	83	742	83	19,520	0	15,356	0	0	83	35,949
	Standard Error	83	83	241	83	836	0	814	0	0	83	
Strata Combined: 6/1–9/30		Season Total										
Sampling Dates: 6/2–7/30												
Sample Size: 1,706												
Female	Percent of Sample	0.0	0.1	0.1	0.3	12.2	0.0	27.7	0.5	0.1	1.5	42.6
	Number in Catch	0	91	83	252	9,756	28	22,259	400	57	1,235	34,161
Male	Percent of Sample	0.1	0.1	0.9	0.4	18.9	0.0	33.9	0.5	0.0	1.3	56.0
	Number in Catch	83	83	722	311	15,176	0	27,158	372	28	1,026	44,958
Total	Percent of Sample	0.1	0.2	1.0	0.7	31.5	0.0	62.6	1.0	0.1	2.8	100.0
	Number in Catch	83	174	805	563	25,267	28	50,184	772	85	2,261	80,221
	Standard Error	83	108	249	142	953	28	990	206	49	330	

Appendix B.3. Estimated age and sex composition of chinook salmon sport fishing harvests at several locations in the Upper Copper River area, 1989.

		Brood Year and Age Group					
		1985	1984	1983		1982	
		1.2	1.3	1.4	2.3	1.5	Total
<b>GULKANA RIVER</b>							
Sample Size:	63						
Female	Percent of Sample	0.0	17.5	34.9	0.0	3.2	55.6
	Number in Catch	0	1,707	3,415	0	310	5,432
Male	Percent of Sample	1.6	9.5	31.7	0.0	1.6	44.4
	Number in Catch	155	931	3,104	0	155	4,346
Total	Percent of Sample	1.6	27.0	66.7	0.0	4.8	100.0
	Number in Catch	155	2,639	6,519	0	466	9,778
	Standard Error	155	551	585	0	264	
<b>KLUTINA RIVER</b>							
Sample Size:	176						
Female	Percent of Sample	0.0	10.2	36.9	1.7	0.0	48.9
	Number in Catch	0	67	241	11	0	319
Male	Percent of Sample	1.7	16.5	32.4	0.6	0.0	51.1
	Number in Catch	11	107	211	4	0	333
Total	Percent of Sample	1.7	26.7	69.3	2.3	0.0	100.0
	Number in Catch	11	174	452	15	0	652
	Standard Error	6	22	23	7	0	
<b>COMBINED LOCATIONS</b>							
Sample Size:	239						
Female	Percent of Sample	0.0	17.0	35.0	0.1	3.0	55.1
	Number in Catch	0	1,774	3,655	11	310	5,751
Male	Percent of Sample	1.6	10.0	31.8	0.0	1.5	44.9
	Number in Catch	166	1,039	3,315	4	155	4,679
Total	Percent of Sample	1.6	27.0	66.8	0.1	4.5	100.0
	Number in Catch	166	2,813	6,971	15	466	10,430
	Standard Error	155	552	586	7	264	



## **APPENDIX C**

Salmon Escapements to Coastal Streams  
of the Copper River Delta and the Bering River.



Appendix C.1. Aerial escapement indices for sockeye salmon returning to the Copper River Delta and the Bering River by date and location, 1989.

Area	Survey <sup>a</sup>		Survey Dates									
	System/Drainage	Site	8 Jun	17 Jun	27 Jun	4 Jul	11 Jul	18 Jul	27 Jul	9 Aug	14 Aug	21 Aug
Copper River Delta	Eyak River	Eyak River	NS	0	0	NC	NC	0	NS	NS	0	NS
		West Shore Beaches	0	35 +	100 +	210	190	440	940	1,420	1,430 *	520 +
		Middle Arm Beaches <sup>d</sup>	30	40	70	120	140	500	430	2,000	2,500 *	1,900
		North Shore Beaches	0	0	NC	NC	20	80 +	10	20	10	NS
		Hatchery Creek Delta <sup>d</sup>	0	25	150	330 *	50	0	0	0	90	0
		Hatchery Creek <sup>d</sup>	0	0	135	220 *	290	420	300	90	50	80
		Power Creek Delta	NS	NS	NS	NS	NS	NS	0	NS	NS	NS
		Power Creek	NS	NS	NS	NS	NS	NS	10	NS	NS	NS
	Ibek Creek	Ibek Creek	NS	NS	NS	NS	NS	NS	NS	0	120 *	80
	Alganik Slough	Alganik Slough	NS	NS	NS	NS	NS	NS	NS	NS	NS	0
		McKinley Lake	0	0	0	300	3,000	3,600	4,700	6,300 *	3,510	100
		Salmon Creek - West Fork	NS	NS	0	0	0	0	150	600 *	1,050	400 +
		Salmon Creek - East Fork	NS	NS	0	0	0	0	80	30 *	160	0
	26/27 Mile Creek		0	0	480	900	3,020 *	1,050	1,640	2,100	930	360
	39 Mile Creek		NS	NS	120	0	1,970	5,140	5,200 +	6,730 +	7,420 + *	2,900 +
	Goat Mountain Creek		NS	NS	0	0	50	NC	1,400	2,200	3,150 *	NS
	Pleasant Creek		NS	855	850	450	990 + *	450 +	20	20	0	0
	Martin River	Martin River - Lower	0	12	0	100	170	180	93	60	33	0
		Ragged Point River	NS	NS	130	950	2,320	950	400	820 *	690	10
		Ragged Point Lake Outlet	NS	NS	0	0	30	150	1,300	300 *	400	300
		Ragged Point Lake	NS	NS	NS	0	0	1,000	100	3,300 *	2,400	3,000
		Martin River - Upper	0	85	90	680	750	420	932	360	805	411
		Martin Lake Outlet	0	170	70	200	150	170	400	2,400 *	300	700
		Martin Lake <sup>d</sup>	0	340	1,770	3,400	1,975	2,800 *	750	1,130	2,800	600
		Martin Lake Feeders	0	0	260	1,200	2,400	2,650 *	1,030	490	70	0
		Pothole River	NS	0	30	350	250	350	210	100	200	200
		Pothole Lake Outlet	NS	0	0	0	0	120	500	0	0	0
		Pothole Lake	NS	0	0	0	0	0	100	1,200	20	650
		Little Martin Lk Outlet	0	0	0	0	25	30	10	0 *	0	0
		Little Martin Lake	NS	0	350	100 +	700	1,040	2,340	3,030 *	920	2,200
		Tokun Springs	NS	0	60	0	115	250	400	420	350	450 *
		Tokun River <sup>d</sup>	0	60	240	300	380	290	2,000 *	1,420	510	490
		Tokun Lake Outlet <sup>d</sup>	0	0	250	50 +	0	0	300 *	500	0	0
		Tokun Lake <sup>d</sup>	0	70	200	500 +	550	600	2,200 *	1,500	130	2,000
	Martin River Slough		0	0	2,250	1,740	1,900	910	3,010 *	2,430	810	140
Bering River Area	Bering River	Bering River	0	NC	0	50	30	40	350	800 *	100	50
		Bering Lake	0	580	2,490	13,500 *	9,650	5,430	3,740	590	260	90
		Dick Creek	0	NS	15	30 *	800	4,000 +	6,000	8,030	2,760	990
		Shepherd Creek - Lagoon	0	180 +	210	0	50 +	0	0	NC	0	0
		Shepherd Creek	NS	NS	0	0	0	60	50	90 + *	100	40 +
		Carbon Creek	NS	NS	0	0	0	20	30	250 *	50	50
		Maxwell Creek	NS	NS	NS	0	0	0	0	0	0	0
		Trout Creek	NS	NS	NS	0	0	0	0	0	0	0
		Clear Creek	NS	NS	NS	0	50	220	250 *	200	60	0
		Kushtaka Lake	NS	NS	NS	0	0	0	75	320 +	730 *	80
		Shokum Creek	NS	NS	NS	0	0	0	15	500 +	800 *	150
	Katalla River		0	0	0	220	330	800	3,320	6,850 SP*	3,450 SP	200
Copper River Delta Total			30	1,692	7,605	12,100	21,435	23,590	30,955	40,970	30,858	17,491
Bering River Area Total			0	760	2,715	13,800	10,910	10,570	13,830	17,630	8,310	1,650
Total			30	2,452	10,320	25,900	32,345	34,160	44,785	58,600	39,168	19,141

- Continued -

## Appendix C.1. (Pg 2 of 2)

Area	Survey <sup>a</sup>		Survey Dates							Estimated Escapement	
	System/Drainage	Site	3 Sep	8 Sep	16 Sep	30 Sep	9 Oct	20 Oct	30 Oct	Site <sup>b</sup>	System <sup>c</sup>
Copper River Delta	Eyak River	Eyak River	NS	NS	NS	NS	NS	NS	NS	0	5,260
		West Shore Beaches	70 +	30	500	0	0	0	0	1,430	
		Middle Arm Beaches <sup>d</sup>	2,200	2,500	1,100	NC	0	0	0	2,500	
		North Shore Beaches	NC	NS	180 *	NC	65	0	0	180	
		Hatchery Creek Delta <sup>d</sup>	NC	300	200 *	0	0	0	0	530	
		Hatchery Creek <sup>d</sup>	50 +	150	400 *	200	0	0	0	620	
		Power Creek Delta	NS	NS	NC	NS	NS	NS	NS	0	
		Power Creek	NS	NS	NC	NS	NS	NS	NS	0	
	Ibek Creek	Ibek Creek	0	40	0	50	0	0	0	120	120
	Alganik Slough	Alganik Slough	NS	0	NC	NS	0	NS	NS	0	6,930
		McKinley Lake	50	130	0	100	0	0	0	6,300	
		Salmon Creek – West Fork	160 +	230	100	0	0	0	0	600	
		Salmon Creek – East Fork	NC	70	0	0	0	0	0	30	
	26/27 Mile Creek		370	0	125	100	0	0	0	3,020	3,020
	39 Mile Creek		430 +	1,800	0	0	0	NS	0	7,420	7,420
	Goat Mountain Creek		NS	540	0	0	0	NS	100	3,150	3,150
	Pleasant Creek		NC	0	0	0	0	NS	0	990	990
	Martin River	Martin River – Lower	0	0	0 *	NC	NS	NS	0	0	0
		Ragged Point River	0	100	0	0	0	0	0	820	4,420
		Ragged Point Lake Outlet	400	400	20	0	0	0	0	300	
		Ragged Point Lake	3,000	2,400	1,500	3,000	250	0	0	3,300	
		Martin River – Upper	100	300	0 *	NC	NS	NC	0	0	0
		Martin Lake Outlet	NC	0	200	NC	NC	NC	0	2,400	7,850
		Martin Lake <sup>d</sup>	NC	140	350	240	255	80	140	2,800	
		Martin Lake Feeders	0	50	0	NC	NC	NC	0	2,650	
		Pothole River	NC	50	0 *	0	0	0	0	0	1,550
		Pothole Lake Outlet	NC	50	50 *	0	0	0	0	50	
		Pothole Lake	400 +	360	1,500 *	300	300	0	500	1,500	
		Little Martin Lk Outlet	0	0	0	0	0	0	0	0	3,030
		Little Martin Lake	300 +	1,400	900	0	NC	0	0	3,030	
		Tokun Springs	0	0	0	0	0	0	0	450	4,950
		Tokun River <sup>d</sup>	100	0	0	0	0	0	0	2,000	
		Tokun Lake Outlet <sup>d</sup>	150	0	0	0	0	0	0	300	
		Tokun Lake <sup>d</sup>	600	1,500	3,400	500	0	0 +	0	2,200	
	Martin River Slough		200	0	0	0	0	0	0	3,010	3,010
Bering River Area	Bering River	Bering River	NC	0	0	NC	NS	NS	NS	800	14,330
		Bering Lake	20 +	100	0	0	0	0	0	13,500	
		Dick Creek	30	30	0	0	0	0	0	30	
		Shepherd Creek – Lagoon	NC	0	NS	NS	NC	NS	NS	0	340
		Shepherd Creek	NS	0	NS	NS	55	NS	NS	90	
		Carbon Creek	NS	NS	NS	NS	0	NS	NS	250	
		Maxwell Creek	NS	NS	NS	NS	0	NS	NS	0	
		Trout Creek	0	0	NS	NS	0	NS	NS	0	0
	Clear Creek	Clear Creek	0	0	NS	NS	0	NS	NS	250	250
		Kushtaka Lake	0	0	NS	NS	0	NS	NS	730	1,530
		Shokum Creek	20	15	NS	NS	0	NS	NS	800	
	Katalia River		NC	40	0	0	0	0	0	6,850	6,850
Copper River Delta Total			8,580	12,540	10,525	4,490	870	80	740		51,700
Bering River Area Total			70	185	0	0	55	0	0		23,300
Total			8,650	12,725	10,525	4,490	925	80	740		75,000

<sup>a</sup> The survey sites represent most of the known sockeye salmon spawning locations in the Copper River Delta and Bering River drainages. Weather permitting, the sites are surveyed weekly. The surveys provide information about the relative strength of escapements among years and within a year, time trends for spawning sites, and the relative escapement strength among sites. The indices are not intended to provide an actual estimate of escapement for the coastal stocks, but they have been used for that purpose in the absence of any other escapement estimating method. The abbreviations used in the table are: NS = no survey, NC = surveyed but no count due to poor conditions, and SP = Possible species confusion. The + sign after some counts indicates that the count is the minimum estimate of fish seen in less than ideal conditions. The \* symbol indicates that this survey count was used as the peak survey for the site without duplication of counts for survey sites along the migratory corridors (see footnote b).

<sup>b</sup> The escapement estimate for each site is the asterisked aerial survey estimate. Where the survey site is a terminal spawning area the peak count is used, however, if the site is a schooling area for migratory fish bound for sites further upstream the count which minimizes possible duplicate counts across dates selected.

<sup>c</sup> The sum of the estimates by site within a system.

<sup>d</sup> These sites typically have very protracted run timing or two temporally segregated spawning populations at the same site. Aerial counts from more than one date may be asterisked and used in the escapement estimate if the surveyor indicated that these counts represented different fish.

Appendix C.2. Aerial escapement indices for coho salmon returning to the Copper River Delta and the Bering River by date and location, 1989.

Area	Survey*		Survey Date										
	System/Drainage	Site	8 Jun	17 Jun	27 Jun	4 Jul	11 Jul	18 Jul	27 Jul	9 Aug	14 Aug	21 Aug	
Copper River Delta	Eyak River	Eyak River	NS	0	0	NC	NC	0	NS	NS	0	NS	
		West Shore Beaches	0	0	0	0	0	0	0	0	0	0	
		Middle Arm Beaches	0	0	0	0	0	0	0	0	0	0	
		North Shore Beaches	0	0	NC	NC	0	0	0	0	0	NS	
		Hatchery Creek Delta	0	0	0	0	0	0	0	0	0	0	
		Hatchery Creek	0	0	0	0	0	0	0	0	0	0	
		Power Creek Delta	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
		Power Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	Ibek Creek		NS	NS	NS	NS	NS	NS	NS	NS	0	50	
	Scott River	Scott River	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
		Elsner Lake	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
		Scott Lake	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
	Alganik Slough	Alganik Slough	NS	0	NS	NS	NS	NS	NS	NS	NS	NS	0
		18/20 Mile Creeks	NS	NS	NS	NS	NS	NS	NS	30	0	50	
		McKinley Lake	0	0	0	0	0	0	0	0	0	0	0
		Salmon Creek – West Fork	NS	NS	0	0	0	0	0	0	0	0	0
		Salmon Creek – East Fork	NS	NS	0	0	0	0	0	0	0	0	0
	26/27 Mile Creek		0	0	0	0	0	0	0	0	150	150	
	39 Mile Creek		NS	NS	0	0	0	0	0	0	0	300	
	Goat Mountain Creek		NS	NS	0	0	0	NC	0	0	0	NS	
	Pleasant Creek		NS	0	0	0	0	0	0	0	0	0	
	Martin River	Martin River – Lower	Martin River – Lower	0	0	0	0	0	0	0	0	40	206
			Ragged Point River	NS	NS	0	0	0	0	0	0	0	120
			Ragged Point Lake Outlet	NS	NS	0	0	0	0	0	0	0	0
			Ragged Point Lake	NS	NS	NS	0	0	0	0	0	0	0
		Martin River – Upper	Martin River – Upper	0	0	0	0	0	0	0	0	0	15
			Martin Lake Outlet	0	0	0	0	0	0	0	0	0	0
			Martin Lake	0	0	0	0	0	0	0	0	0	0
			Martin Lake Feeders	0	0	0	0	0	0	0	0	0	0
		Pothole River	Pothole River	NS	0	0	0	0	0	0	0	0	0
			Pothole Lake Outlet	NS	0	0	0	0	0	0	0	0	0
			Pothole Lake	NS	0	0	0	0	0	0	0	0	0
			Little Martin Lake Outlet	0	0	0	0	0	0	0	0	0	0
Little Martin Lake		Little Martin Lake	NS	0	0	0	0	0	0	0	0	0	
		Tokun Springs	NS	0	0	0	0	0	0	0	0	0	
		Tokun River	0	0	0	0	0	0	0	0	0	0	
		Tokun Lake Outlet	0	0	0	0	0	0	0	0	0	0	
Tokun Lake		0	0	0	0	0	0	0	0	0	0		
Martin River Slough			0	0	0	0	0	0	0	0	0	10	
Bering River Area		Bering River	Bering River	0	NC	0	0	0	0	0	0	0	0
	Bering Lake		0	0	0	0	0	0	0	0	0	0	
	Dick Creek		NS	NS	0	0	0	0	0	0	0	0	
	Shepherd Creek – Lagoon		0	0	0	0	0	0	0	NC	0	0	
	Shepherd Creek		NS	NS	0	0	0	0	0	0	0	0	
	Carbon Creek		NS	NS	0	0	0	0	0	NC	0	0	
	Maxwell Creek		NS	NS	0	0	0	0	0	0	0	0	
	Trout Creek		NS	NS	NS	0	0	0	0	0	0	0	
	Clear Creek		NS	NS	NS	0	0	0	0	0	0	0	
	Kushtaka Lake		NS	NS	NS	0	0	0	0	0	0	0	
	Shokum Creek		NS	NS	NS	0	0	0	0	0	0	0	
	Katalla River			0	0	0	0	0	0	0	0	0	
	Nichawak/Gandil Rivers	Gandil River	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
		Nichawak River	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	110
	Controller Bay Streams	Campbell River	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
		Edwards River	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
		Okalee River	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
		Other Clear Streams	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
	Copper River Delta Aerial Survey Daily Totals			0	0	0	0	0	0	0	30	190	901
Bering River Area Total			0	0	0	0	0	0	0	0	0	110	
Total			0	0	0	0	0	0	0	30	190	1,011	

## Appendix C.2. (Pg 2 of 3)

Area	Survey <sup>a</sup>		Survey Date							Estimated Escapement		
	System/Drainage	Site	3 Sep	8 Sep	16 Sep	30 Sep	9 Oct	20 Oct	30 Oct	Site <sup>b</sup>	System <sup>c</sup>	
Copper River Delta	Eyak River	Eyak River	NS	NS	NS	NS	NS	NS	NS	0	2,325	
		West Shore Beaches	30 +	0	1,025 *	400	0	10	40	1,025		
		Middle Arm Beaches	0	0	900 *	NC	0	0	0	900		
		North Shore Beaches	NC	NS	0 *	NC	0	0	0	0		
		Hatchery Creek Delta	NC	0	200	0 *	0	0	0	0		
		Hatchery Creek	0	0	0	400 *	50	85	50	400		
		Power Creek Delta	NS	NS	NC	NS	NS	NS	NS	NS		
		Power Creek	NS	NS	NC	NS	NS	NS	NS	NS		
	Ibek Creek		100 +	350	3,080	3,090	2,911	4,330 *	2,980	4,330	4,330	
	Scott River	Scott River	NS	0	0	0	0	NS	120 *	120	510	
		Elsner Lake	NS	0	0	0	35	190 *	180	190		
		Scott Lake	NS	0	150 +	200 *	125	NS	0	200		
	Alganik Slough	Alganik Slough	NC	0	NC	NS	0	NS	NS	0	3,790	
		18/20 Mile Creeks	50 +	50	630 +	1,000 *	375	590	825	1,000		
		McKinley Lake	0	0	200	800 *	30	151	0	800		
		Salmon Creek – West Fork	10 +	0	0	940	60	170	1,460 *	1,460		
		Salmon Creek – East Fork	NC	0	160	0	530 *	50	300	530		
	26/27 Mile Creek		100	60	190	810 *	260	NC	535	810	810	
	39 Mile Creek		400	1,800	2,150 *	860	360	NS	20	2,150	2,150	
	Goat Mountain Creek		NS	0	240	2,500 *	900	NS	1,400	2,500	2,500	
	Pleasant Creek		NC	961 *	0	0	25	NS	0	961	961	
	Martin River	Martin River – Lower	220	260	2,900	NC	NS	NS	40 *	40	40	
		Ragged Point River	10	0	80	450	575	1,155	2,500 *	2,500	3,600	
		Ragged Point Lake Outlet	0	0	0	100 *	0	0	0	100		
		Ragged Point Lake	0	0	500	1,000 *	0	200 +	0	1,000		
		Martin River – Upper	1,920	700	2,200	NC	NS	NS	430 *	430	430	
		Martin Lake Outlet	NC	0	300 *	NC	NC	NC	0	300	590	
		Martin Lake	50 +	0	180 *	NC	NC	NC	0	180		
		Martin Lake Feeders	NC	0	110 *	NC	NC	NC	60	110		
		Pothole River	NC	0	1,300 *	60	0	30	180	1,300	1,300	
		Pothole Lake Outlet	NC	0	0 *	0	0	0	0	0		
		Pothole Lake	0	200	0 *	0	45	200 +	0	0		
		Little Martin Lake Outlet	1,260	500	1,400	7,000 *	5,300	3,030	2,130	7,000	7,200	
		Little Martin Lake	140 +	200	0	200 *	NC	0	0	200		
		Tokun Springs	100 +	200	90	200	75	20	600 *	600	2,870	
		Tokun River	120	40	90	700	1,700	930	2,150 *	2,150		
		Tokun Lake Outlet	100	0	0	0	0 *	0	0	0		
		Tokun Lake	0	0	0	0	120 *	20	0	120		
	Martin River Slough		1,460 +	4,690	3,640	7,960 *	1,805	6,364	3,030	7,960	7,960	
Bering River Area	Bering River	Bering River	NC	0	360	NC	NS	NS	NS	0	1,570	
		Bering Lake	0	0	280	1,000 +	550	NC	20 +	1,000		
		Dick Creek	110 +	470	260	570 *	70	525	750	570		
		Shepherd Creek – Lagoon	NC	0	NS	NS	NC	NS	NS	0	70	
		Shepherd Creek	NS	70 *	NS	NS	NC	NS	NS	70		
		Carbon Creek	NS	NS	NS	NS	65	NS	NS	0		
		Maxwell Creek	NS	NS	NS	NS	0	NS	NS	0		
		Trout Creek	0	0	NS	NS	0	NS	NS	0	0	
		Clear Creek	0	0	NS	NS	0	NS	NS	0	0	
		Kushtaka Lake	0	0	NS	NS	15 *	NS	NS	15	15	
		Shokum Creek	0	0	NS	NS	0	NS	NS	0	0	
	Katalla River		NC	700	1,220 *	690	252	100	140	1,220	1,220	
	Nichawak/Gandil Rivers	Gandil River	NC	1,320	520	1,410 *	1,110	140 +	220	1,410	3,960	
		Nichawak River	NC	500	1,200	460	125	10	2,550 *	2,550		
	Controller Bay Streams	Campbell River	NS	0	300 *	0	60	0	22	300	9,000	
		Edwards River	NS	NS	8,070 *	7,250	5,620	5,500	5,570	8,070		
		Okalee River	NS	NS	630 *	NC	150	80	425	630		
		Other Clear Streams	NS	NS	0 *	0	NS	NS	NS	0		
	Copper River Delta Aerial Survey Daily Totals			6,070	10,011	21,715	28,670	15,281	17,525	19,030		41,366
	Bering River Area Total			110	3,060	12,840	11,380	8,017	775	3,702		15,835
Total			6,180	13,071	34,555	40,050	23,298	18,300	22,732		57,201	

- <sup>a</sup> The survey sites represent most of the known coho salmon spawning locations in the Copper River Delta and Bering River drainages. Weather permitting, the sites are surveyed weekly. The surveys provide information about the relative strength of escapements among years and within a year, time trends for spawning sites, and the relative escapement strength among sites. The indices are not intended to provide an actual estimate of escapement for the coastal stocks, but they have been used for that purpose in the absence of any other escapement estimating method. The abbreviations used in the table are: NS = no survey, NC = surveyed but no count due to poor conditions, and SP = possible species confusion. The + signs indicate a minimum estimate of fish seen under less than ideal conditions. The \* symbols indicate counts used as peak survey for the site without duplication of counts for survey sites along migratory corridors (see footnote b).
- <sup>b</sup> The escapement estimate for each site is the asterisked aerial survey estimate. Where the survey site is a terminal spawning area the peak count is used, however, if the site is a schooling area for migratory fish bound for sites further upstream the count which minimizes possible duplicate counts across dates selected.
- <sup>c</sup> The sum of the estimates by site within a system.

Appendix C.3. Estimated age and sex composition in the combined escapements of sockeye salmon to the Copper River Delta and Bering River drainages, 1989.

		Brood Year and Age Group												
		1987	1986		1985			1984			1983		1982	
		0.1	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	2.3	3.2	3.3	Total
COPPER RIVER DELTA SYSTEM TOTAL														
Stratum Dates:		6/8-9/30												
Sampling Dates:		7/1-8/14												
Sample Size:		6,035												
Female	Percent of Sample	0.0	0.7	0.0	2.6	6.7	0.0	23.2	1.4	0.0	5.5	0.0	0.0	40.1
	Number in Catch	0	316	14	1,182	3,046	0	10,552	636	0	2,527	6	0	18,278
Male	Percent of Sample	0.1	7.0	2.6	1.4	28.0	1.2	13.8	2.9	0.0	2.9	0.0	0.0	59.9
	Number in Catch	26	3,206	1,207	629	12,764	524	6,270	1,319	6	1,312	10	0	27,272
Total	Percent of Sample	0.1	7.7	2.7	4.0	34.7	1.2	36.9	4.3	0.0	8.4	0.0	0.0	100.0
	Number in Catch	26	3,522	1,221	1,810	15,810	524	16,822	1,955	6	3,838	16	0	45,550
	Standard Error	15	155	103	118	303	62	309	136	6	189	9	0	
BERING RIVER DRAINAGE TOTAL														
Stratum Dates:		6/17-9/8												
Sampling Dates:		7/11,8/4												
Sample Size:		1,347												
Female	Percent of Sample	0.0	0.0	0.0	0.5	1.6	0.0	41.4	0.4	0.0	7.5	0.0	0.0	51.3
	Number in Catch	0	2	0	73	247	0	6,565	59	0	1,194	0	0	8,139
Male	Percent of Sample	0.0	1.8	1.2	0.3	10.0	0.0	29.7	0.8	0.0	4.6	0.0	0.2	48.7
	Number in Catch	0	291	194	49	1,593	2	4,714	125	0	728	0	24	7,721
Total	Percent of Sample	0.0	1.9	1.2	0.8	11.6	0.0	71.1	1.2	0.0	12.1	0.0	0.2	100.0
	Number in Catch	0	293	194	121	1,840	2	11,279	184	0	1,922	0	24	15,860
	Standard Error	0	83	68	54	193	2	260	55	0	167	0	24	
COMBINED COPPER DELTA/BERING RIVER ESCAPEMENTS														
Stratum Dates:		6/8-9/30												
Sampling Dates:		7/1-8/14												
Sample Size:		7,382												
Female	Percent of Sample	0.0	0.5	0.0	2.0	5.4	0.0	27.9	1.1	0.0	6.1	0.0	0.0	43.0
	Number in Catch	0	318	14	1,255	3,293	0	17,117	695	0	3,720	6	0	26,417
Male	Percent of Sample	0.0	5.7	2.3	1.1	23.4	0.9	17.9	2.4	0.0	3.3	0.0	0.0	57.0
	Number in Catch	26	3,498	1,401	677	14,357	526	10,984	1,444	6	2,040	10	24	34,993
Total	Percent of Sample	0.0	6.2	2.3	3.1	28.7	0.9	45.8	3.5	0.0	9.4	0.0	0.0	100.0
	Number in Catch	26	3,816	1,415	1,932	17,650	526	28,101	2,139	6	5,760	16	24	61,410
	Standard Error	15	176	123	129	359	63	404	147	6	252	9	24	

Appendix C.4. Estimated age and sex composition of the sockeye salmon escapements to the Copper River Delta, 1989. Based on samples from beach seine catches and aerial estimates of escapement to both stream and beach spawning sites.

		Brood Year and Age Group											
		1987	1986		1985			1984			1983		
		0.1	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	2.3	3.2	Total
EYAK LAKE – South Beaches													
Stratum Dates:		6/17–9/16											
Sampling Dates:		7/12, 8/14											
Sample Size:		421											
Female	Percent of Sample	0.0	0.3	0.0	7.6	2.6	0.0	29.3	0.0	0.0	3.3	0.0	43.0
	Number in Escapement	0	5	0	108	37	0	418	0	0	47	0	615
Male	Percent of Sample	0.5	5.0	1.3	8.2	20.8	0.2	18.3	1.4	0.0	1.3	0.0	57.0
	Number in Escapement	7	71	19	117	297	2	262	20	0	19	0	815
Total	Percent of Sample	0.5	5.3	1.3	15.8	23.4	0.2	47.6	1.4	0.0	4.6	0.0	100.0
	Number in Escapement	7	76	19	225	334	2	681	20	0	66	0	1,430
	Standard Error	5	18	5	29	33	2	39	7	0	14	0	
EYAK LAKE – Middle Arm Beaches													
Stratum Dates:		6/8–9/16											
Sampling Dates:		8/10											
Sample Size:		549											
Female	Percent of Sample	0.0	0.2	0.0	0.9	6.9	0.0	32.2	1.1	0.0	8.4	0.0	49.7
	Number in Escapement	0	5	0	23	173	0	806	27	0	209	0	1,243
Male	Percent of Sample	0.0	0.7	0.9	1.8	12.6	0.5	27.1	0.7	0.0	5.8	0.0	50.3
	Number in Escapement	0	18	23	46	314	14	679	18	0	146	0	1,257
Total	Percent of Sample	0.0	0.9	0.9	2.7	19.5	0.5	59.4	1.8	0.0	14.2	0.0	100.0
	Number in Escapement	0	23	23	68	487	14	1,485	46	0	355	0	2,500
	Standard Error	0	10	10	17	42	8	52	14	0	37	0	
MCKINLEY LAKE													
Stratum Dates:		7/4–9/30											
Sampling Dates:		7/24											
Sample Size:		613											
Female	Percent of Sample	0.0	0.3	0.0	1.0	8.0	0.0	26.8	0.2	0.0	4.2	0.0	40.5
	Number in Escapement	0	23	0	68	554	0	1,854	11	0	294	0	2,804
Male	Percent of Sample	0.2	4.9	2.3	0.5	33.8	0.2	13.1	2.8	0.0	2.0	0.0	59.5
	Number in Escapement	11	339	158	34	2,340	11	904	192	0	136	0	4,126
Total	Percent of Sample	0.2	5.2	2.3	1.5	41.8	0.2	39.8	2.9	0.0	6.2	0.0	100.0
	Number in Escapement	11	362	158	102	2,894	11	2,758	203	0	430	0	6,930
	Standard Error	11	62	42	34	138	11	137	47	0	68	0	
27 MILE CREEK													
Stratum Dates:		6/27–9/30											
Sampling Dates:		6/30											
Sample Size:		523											
Female	Percent of Sample	0.0	0.8	0.0	8.0	2.1	0.0	23.5	0.6	0.0	1.3	0.0	36.3
	Number in Escapement	0	23	0	243	64	0	710	17	0	40	0	1,097
Male	Percent of Sample	0.0	18.0	1.7	1.9	35.8	0.2	3.6	1.7	0.0	0.8	0.0	63.7
	Number in Escapement	0	543	52	58	1,080	6	110	52	0	23	0	1,923
Total	Percent of Sample	0.0	18.7	1.7	9.9	37.9	0.2	27.2	2.3	0.0	2.1	0.0	100.0
	Number in Escapement	0	566	52	300	1,143	6	820	69	0	64	0	3,020
	Standard Error	0	52	17	40	64	6	59	20	0	19	0	

–Continued–

## Appendix C.4. (Pg 2 of 3)

		Brood Year and Age Group											
		1987	1986		1985			1984			1983		
		0.1	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	2.3	3.2	Total
39 MILE CREEK													
Stratum Dates:		6/27-9/8											
Sampling Dates:		7/14											
Sample Size:		540											
Female	Percent of Sample	0.0	0.2	0.0	2.0	3.9	0.0	32.0	1.5	0.0	8.0	0.0	47.6
	Number in Escapement	0	14	0	151	289	0	2,377	110	0	591	0	3,531
Male	Percent of Sample	0.0	1.5	0.9	1.7	15.7	0.7	22.0	3.9	0.0	5.9	0.0	52.4
	Number in Escapement	0	110	69	124	1,168	55	1,635	289	0	440	0	3,889
Total	Percent of Sample	0.0	1.7	0.9	3.7	19.6	0.7	54.1	5.4	0.0	13.9	0.0	100.0
	Number in Escapement	0	124	69	275	1,457	55	4,012	398	0	1,031	0	7,420
	Standard Error	0	41	31	60	127	27	159	72	0	111	0	
PLEASANT CREEK													
Stratum Dates:		6/17-8/9											
Sampling Dates:		7/1											
Sample Size:		417											
Female	Percent of Sample	0.0	0.5	0.0	9.1	5.8	0.0	34.3	0.5	0.0	0.2	0.0	50.4
	Number in Escapement	0	5	0	90	57	0	339	5	0	2	0	499
Male	Percent of Sample	0.0	2.2	0.2	5.0	13.7	0.2	26.9	1.0	0.0	0.5	0.0	49.6
	Number in Escapement	0	21	2	50	135	2	266	9	0	5	0	491
Total	Percent of Sample	0.0	2.6	0.2	14.1	19.4	0.2	61.2	1.4	0.0	0.7	0.0	100.0
	Number in Escapement	0	26	2	140	192	2	605	14	0	7	0	990
	Standard Error	0	8	2	17	19	2	24	6	0	4	0	
RAGGED POINT RIVER													
Stratum Dates:		7/18-10/9											
Sampling Dates:		7/7											
Sample Size:		576											
Female	Percent of Sample	0.0	3.6	0.0	5.4	8.0	0.0	19.4	0.5	0.0	4.0	0.0	41.0
	Number in Escapement	0	161	0	238	353	0	859	23	0	176	0	1,811
Male	Percent of Sample	0.2	18.2	2.6	1.7	19.8	0.2	11.5	1.0	0.0	3.8	0.0	59.0
	Number in Escapement	8	806	115	77	875	8	506	46	0	169	0	2,609
Total	Percent of Sample	0.2	21.9	2.6	7.1	27.8	0.2	30.9	1.6	0.0	7.8	0.0	100.0
	Number in Escapement	8	967	115	315	1,228	8	1,366	69	0	345	0	4,420
	Standard Error	8	76	29	47	83	8	85	23	0	49	0	
MARTIN LAKE													
Stratum Dates:		7/17-10/30											
Sampling Dates:		7/20											
Sample Size:		566											
Female	Percent of Sample	0.0	0.7	0.2	2.1	9.2	0.0	24.6	3.2	0.0	9.7	0.0	49.6
	Number in Escapement	0	55	14	166	721	0	1,928	250	0	763	0	3,897
Male	Percent of Sample	0.0	5.8	4.1	0.7	28.4	1.1	4.2	3.9	0.0	2.1	0.0	50.4
	Number in Escapement	0	458	319	55	2,233	83	333	305	0	166	0	3,953
Total	Percent of Sample	0.0	6.5	4.2	2.8	37.6	1.1	28.8	7.1	0.0	11.8	0.0	100.0
	Number in Escapement	0	513	333	222	2,954	83	2,261	555	0	929	0	7,850
	Standard Error	0	82	67	55	160	34	150	85	0	107	0	

--Continued--



		Brood Year and Age Group											
		1987	1986		1985			1984			1983		
		0.1	0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	2.3	3.2	Total
LITTLE MARTIN LAKE													
Stratum Dates:		6/27-9/16											
Sampling Dates:		7/27											
Sample Size:		537											
Female	Percent of Sample	0.0	0.0	0.0	0.0	9.9	0.0	7.8	5.4	0.0	10.2	0.2	33.5
	Number in Escapement	0	0	0	0	299	0	237	164	0	310	6	1,016
Male	Percent of Sample	0.0	0.2	14.7	0.0	21.2	11.2	6.5	7.1	0.2	5.2	0.2	66.5
	Number in Escapement	0	6	446	0	643	339	197	214	6	158	6	2,014
Total	Percent of Sample	0.0	0.2	14.7	0.0	31.1	11.2	14.3	12.5	0.2	15.5	0.4	100.0
	Number in Escapement	0	6	446	0	942	339	434	378	6	468	11	3,030
	Standard Error	0	6	46	0	61	41	46	43	6	47	8	
TOKUN LAKE													
Stratum Dates:		6/27-9/30											
Sampling Dates:		8/8											
Sample Size:		597											
Female	Percent of Sample	0.0	0.0	0.0	0.2	9.0	0.0	15.6	0.3	0.0	0.8	0.0	26.0
	Number in Escapement	0	0	0	8	448	0	771	17	0	41	0	1,285
Male	Percent of Sample	0.0	0.0	0.0	0.3	47.4	0.0	25.3	0.3	0.0	0.7	0.0	74.0
	Number in Escapement	0	0	0	17	2,346	0	1,252	17	0	33	0	3,665
Total	Percent of Sample	0.0	0.0	0.0	0.5	56.4	0.0	40.9	0.7	0.0	1.5	0.0	100.0
	Number in Escapement	0	0	0	25	2,794	0	2,023	33	0	75	0	4,950
	Standard Error	0	0	0	14	101	0	100	17	0	25	0	
MARTIN RIVER SLOUGH													
Stratum Dates:		6/27-9/3											
Sampling Dates:		7/6											
Sample Size:		696											
Female	Percent of Sample	0.0	0.9	0.0	2.9	1.7	0.0	8.3	0.4	0.0	1.7	0.0	15.9
	Number in Escapement	0	26	0	86	52	0	251	13	0	52	0	480
Male	Percent of Sample	0.0	27.7	0.1	1.7	44.3	0.1	4.2	5.2	0.0	0.6	0.1	84.1
	Number in Escapement	0	835	4	52	1,332	4	125	156	0	17	4	2,530
Total	Percent of Sample	0.0	28.6	0.1	4.6	46.0	0.1	12.5	5.6	0.0	2.3	0.1	100.0
	Number in Escapement	0	861	4	138	1,384	4	376	169	0	69	4	3,010
	Standard Error	0	52	4	24	57	4	38	26	0	17	4	
COPPER RIVER DELTA SYSTEM TOTAL													
Stratum Dates:		6/8-9/30											
Sampling Dates:		7/1-8/14											
Sample Size:		6,035											
Female	Percent of Sample	0.0	0.7	0.0	2.6	6.7	0.0	23.2	1.4	0.0	5.5	0.0	40.1
	Number in Escapement	0	316	14	1,182	3,046	0	10,552	636	0	2,527	6	18,278
Male	Percent of Sample	0.1	7.0	2.6	1.4	28.0	1.2	13.8	2.9	0.0	2.9	0.0	59.9
	Number in Escapement	26	3,206	1,207	629	12,764	524	6,270	1,319	6	1,312	10	27,272
Total	Percent of Sample	0.1	7.7	2.7	4.0	34.7	1.2	36.9	4.3	0.0	8.4	0.0	100.0
	Number in Escapement	26	3,522	1,221	1,810	15,810	524	16,822	1,955	6	3,838	16	45,550
	Standard Error	15	155	103	118	303	62	309	136	6	189	9	

Appendix C.5. Estimated age and sex composition of the sockeye salmon escapements to the Bering River drainage, 1989. Based on beach seine catches and aerial estimates of escapements to both stream and beach spawning sites.

		Brood Year and Age Group									
		1986		1985			1984		1983	1982	
		0.2	1.1	0.3	1.2	2.1	1.3	2.2	2.3	3.3	Total
BERING LAKE – Vicinity of Dick Creek											
Stratum Dates:		6/17–9/8									
Sampling Dates:		7/11									
Sample Size:		590									
Female	Percent of Sample	0.0	0.0	0.5	1.4	0.0	43.4	0.2	5.3	0.0	50.7
	Number in Escapement	0	0	73	194	0	6,218	24	753	0	7,262
Male	Percent of Sample	2.0	1.4	0.3	10.7	0.0	30.8	0.7	3.2	0.2	49.3
	Number in Escapement	291	194	49	1,530	0	4,420	97	461	24	7,068
Total	Percent of Sample	2.0	1.4	0.8	12.0	0.0	74.2	0.8	8.5	0.2	100.0
	Number in Escapement	291	194	121	1,724	0	10,638	121	1,214	24	14,330
	Standard Error	83	68	54	192	0	258	54	164	24	
KUSHTAKA LAKE – Mouth of Shokum Creek											
Stratum Dates:		7/27–9/8									
Sampling Dates:		8/4									
Sample Size:		757									
Female	Percent of Sample	0.1	0.0	0.0	3.4	0.0	22.7	2.2	28.8	0.0	57.3
	Number in Escapement	2	0	0	53	0	348	34	441	0	877
Male	Percent of Sample	0.0	0.0	0.0	4.1	0.1	19.2	1.8	17.4	0.0	42.7
	Number in Escapement	0	0	0	63	2	293	28	267	0	653
Total	Percent of Sample	0.1	0.0	0.0	7.5	0.1	41.9	4.1	46.2	0.0	100.0
	Number in Escapement	2	0	0	115	2	641	63	707	0	1,530
	Standard Error	2	0	0	15	2	27	11	28	0	
BERING RIVER DRAINAGE TOTAL											
Stratum Dates:		6/17–9/8									
Sampling Dates:		7/11,8/4									
Sample Size:		1,347									
Female	Percent of Sample	0.0	0.0	0.5	1.6	0.0	41.4	0.4	7.5	0.0	51.3
	Number in Escapement	2	0	73	247	0	6,565	59	1,194	0	8,139
Male	Percent of Sample	1.8	1.2	0.3	10.0	0.0	29.7	0.8	4.6	0.2	48.7
	Number in Escapement	291	194	49	1,593	2	4,714	125	728	24	7,721
Total	Percent of Sample	1.9	1.2	0.8	11.6	0.0	71.1	1.2	12.1	0.2	100.0
	Number in Escapement	293	194	121	1,840	2	11,279	184	1,922	24	15,860
	Standard Error	83	68	54	193	2	260	55	167	24	



## **APPENDIX D**

Salmon Escapements to the Upper Copper River.

## Appendix D.1

## Daily Copper River salmon escapement estimates at the Miles Lake sonar site, 1989.

Date	North Bank	South Bank	Total Daily	Cumulative Total
17-May		732 <sup>a</sup>	732	732
18-May		3,660 <sup>b</sup>	3,660	4,392
19-May		6,588 <sup>c</sup>	6,588	10,980
20-May	880 <sup>d</sup>	6,055 <sup>e</sup>	6,935	17,915
21-May	500	4,334	4,834	22,749
22-May	1,004	3,026	4,030	26,779
23-May	793	5,679	6,472	33,251
24-May	983	6,465	7,448	40,699
25-May	783	3,875	4,658	45,357
26-May	1,363	6,955	8,318	53,675
27-May	2,770	10,373	13,143	66,818
28-May	1,529	12,351	13,880	80,698
29-May	879	9,798	10,677	91,375
30-May	547	4,828	5,375	96,750
31-May	383	6,933 <sup>f</sup>	7,316	104,066
01-Jun	361	6,680	7,041	111,107
02-Jun	376	4,858	5,234	116,341
03-Jun	350	6,517	6,867	123,208
04-Jun	564	7,991	8,555	131,763
05-Jun	392	7,120	7,512	139,275
06-Jun	445	7,274	7,719	146,994
07-Jun	533	12,160	12,693	159,687
08-Jun	540	14,025	14,565	174,252
09-Jun	846	8,594	9,440	183,692
10-Jun	1,058	11,068	12,126	195,818
11-Jun	1,065	8,598	9,663	205,481
12-Jun	804	7,452	8,256	213,737
13-Jun	726	9,900	10,626	224,363
14-Jun	631	12,917	13,548	237,911
15-Jun	519	9,403	9,922	247,833
16-Jun	445	8,444	8,889	256,722
17-Jun	151	9,869	10,020	266,742
18-Jun	511	10,620	11,131	277,873
19-Jun	264	8,081	8,345	286,218
20-Jun	171	7,404	7,575	293,793
21-Jun	544	6,625	7,169	300,962
22-Jun	296	8,572	8,868	309,830
23-Jun	258	5,592	5,850	315,680
24-Jun	104	3,823	3,927	319,607
25-Jun	197	2,799	2,996	322,603
26-Jun	139	3,287	3,426	326,029
27-Jun	157	3,083	3,240	329,269
28-Jun	133	6,169	6,302	335,571
29-Jun	518	5,972	6,490	342,061
30-Jun	492	6,862	7,354	349,415

- Continued -

Appendix D.1. (Pg 2 of 2).

Date	North Bank	South Bank	Total Daily	Cumulative Total
01-Jul	250	7,680	7,930	357,345
02-Jul	158	5,138	5,296	362,641
03-Jul	149	4,827	4,976	367,617
04-Jul	207	7,162	7,369	374,986
05-Jul	370	10,369	10,739	385,725
06-Jul	355	9,669	10,024	395,749
07-Jul	304	9,932	10,236	405,985
08-Jul	385	10,728	11,113	417,098
09-Jul	508	10,253	10,761	427,859
10-Jul	465	9,041	9,506	437,365
11-Jul	290	8,163	8,453	445,818
12-Jul	367	11,586	11,953	457,771
13-Jul	245	9,084	9,329	467,100
14-Jul	395	9,875	10,270	477,370
15-Jul	125	12,158	12,283	489,653
16-Jul	220	10,677	10,897	500,550
17-Jul	224	8,679	8,903	509,453
18-Jul	401	11,410	11,811	521,264
19-Jul	725	9,842	10,567	531,831
20-Jul	501	9,668	10,169	542,000
21-Jul	596	8,043	8,639	550,639
22-Jul		8,908	8,908	559,547
23-Jul		8,103	8,103	567,650
24-Jul		6,250	6,250	573,900
25-Jul		5,303	5,303	579,203
26-Jul		5,706	5,706	584,909
27-Jul		5,699	5,699	590,608
28-Jul		4,926	4,926	595,534
29-Jul		4,150	4,150	599,684
30-Jul		2,519	2,519	602,203
31-Jul		1,551	1,551	603,754
01-Aug		2,299	2,299	606,053
02-Aug		1,744	1,744	607,797
03-Aug				
Total	33,244	574,553	607,797	

<sup>a</sup> 4 hours operational, expanded to daily estimate.

<sup>b</sup> Average of previous and following daily estimates.

<sup>c</sup> 12 hours operational using artificial substrate, expanded to daily estimate.

<sup>d</sup> 14 hours operational, expanded to daily estimate.

<sup>e</sup> South bank substrate knocked out by ice at 11:05,

17 hours operational using artificial substrate, expanded to daily estimate.

<sup>f</sup> Operational using permanent substrate at 03:00.

Appendix D.2. Sockeye salmon escapement through the Long Lake weir, 1989. Data collected by Cliff Collins and family of Long Lake, Alaska.

Date	Daily	Cumulative
08/08	13	13
08/09	216	229
08/10	203	432
08/11	142	574
08/12	103	677
08/13	0	677
08/14	13	690
08/15	138	828
08/16	344	1,172
08/17	822	1,994
08/18	137	2,131
08/19	386	2,517
08/20	640	3,157
08/21	32	3,189
08/22	48	3,237
08/23	169	3,406
08/24	1,103	4,509
08/25	736	5,245
08/26	124	5,369
08/27	408	5,777
08/28	1,070	6,847
08/29	1,940	8,787
08/30	249	9,036
08/31	0	9,036
09/01	863	9,899
09/02	0	9,899
09/03	154	10,053
09/04	37	10,090
09/05	53	10,143
09/06	3,052	13,195
09/07	70	13,265
09/08	104	13,369
09/09	168	13,537
09/10	139	13,676
09/11	17	13,693
09/12	556	14,249
09/13	1,024	15,273
09/14	97	15,370
09/15	33	15,403
09/16	334	15,737
09/17	8	15,745
09/18	0	15,745
09/19	713	16,458
09/20	49	16,507
09/21	5	16,512
09/22	311	16,823
09/23	165	16,988
09/24	302	17,290
09/25	11	17,301
09/26	217	17,518
09/27	50	17,568
09/28	148	17,716
09/29	0	17,716
09/30	10	17,726

Appendix D.3. Peak aerial escapement estimates by date and location for sockeye and chinook salmon returning to the upper Copper River drainage, 1989.

Survey Location	Sockeye		Chinook	
	Date	Count	Date	Count
Bremner River				
Peninsula Lake	9/13	75		
Steamboat Lake	9/13	425		
Salmon Creek <sup>a</sup>	8/4	425		
Price Creek	8/22	0		
Unnamed Creek #1	8/22	6		
Unnamed Creek #2	8/22	0		
Unnamed Tributary	9/13	125		
Tiekel Lake	8/22	20		
Swan Lakes				
Lake #1	8/4	0		
Lake #2	8/4	50		
Lake #3	8/4	5		
Lake #4	8/4	0		
Tonsina River <sup>b</sup>				
Lower Tonsina Creek	8/4	0		
Little Tonsina River <sup>c</sup>			8/4	65
Fourth of July Creek			8/4	0
Tonsina Lake <sup>a</sup>	10/24	2450		
Greyling Creek <sup>c</sup>			7/28	72
Klutina River <sup>b</sup>	NS			
Manker Creek <sup>c</sup>			7/19	165
Mahlo Creek <sup>a</sup>	7/28	4600	7/28	7
Island Lake	8/4	2280		
1884 Lake	7/28	5		
Hallet Slough Beach <sup>b, d</sup>	7/28	305		
Curtis Creek	7/28	2		
St. Anne Creek <sup>a, c</sup>	7/28	3100	7/19	90
Tazlina River				
Upper Mendeltna Creek	6/30	710		
Mendeltna Creek <sup>a, c</sup>	8/30	2000	7/19	175
Kiana Creek <sup>c</sup>	7/28	200	7/28	344
Tazlina Lake <sup>d</sup>	7/19	34		
Gulkana River				
Mouth to West Fork	8/21	6800	7/28	472
West Fork <sup>c</sup>	7/27	720	7/27	471
Dog Creek	NS			
Crosswind Lake	9/15	8000		
Moose Creek			7/27	29
Keg Creek <sup>a</sup>	7/18	1450		
Victor Creek	7/18	3950		
West Fork to Middle Fk. <sup>c</sup>	8/21	2400	7/28	1111
Middle Fork <sup>c</sup>	7/18	100	7/18	249
Dickey Lake <sup>a, d</sup>	7/27	28		
Swede Lake <sup>a</sup>	8/3	275		
Hungry Hollow Creek <sup>c</sup>			7/18	44

- Continued -



Appendix D.3. (Pg 2 of 2)

Survey Location	Sockeye		Chinook	
	Date	Count	Date	Count
East Fork				
East Fork to Paxson Lk. <sup>a, c</sup>	8/21	900	7/27	89
Paxson Lake	8/3	0		
Paxson Lake Inlet	9/19	3800		
Inlet to Mud Creek <sup>a</sup>	8/3	3200		
Mud Creek and Lake <sup>a</sup>	8/3	0		
Mud Creek to Summit Lk. <sup>a</sup>	9/15	6800		
Fish Lake <sup>a, d</sup>	9/15	6700		
Summit Lake	9/19	11200		
Gunn Creek	9/28	21875		
Gunn Lake Creek	10/8	1300		
Gakona River				
Spring Creek			7/27	109
Alder Creek	7/27	6		
Drop Creek			7/26	3
Tributary by Boulder Creek			7/26	19
Bear Creek			7/26	2
Chistochina River				
East Fork <sup>c</sup>			7/18	740
Eagle Creek	7/26	95	7/26	80
Slana River <sup>b</sup>				
Mentasta Lake <sup>a</sup>	7/26	3270		
Fish Creek <sup>a</sup>	7/18	1500		
Bad Crossing #1 <sup>a, d</sup>	7/26	525		
Bad Crossing #2 <sup>a, d</sup>	7/26	2500		
Bone Creek	7/18	150	7/18	28
Slana Sloughs	7/26	75		
Suslositna Lake (New)	7/26	90		
Suslota Lake <sup>a, d</sup>	9/15	525		
Indian River <sup>c</sup>			7/26	3
Ahtell Creek			7/26	0
Tanada Creek				
Tanada Lake <sup>a</sup>	9/15	2550		
Tanada Lake Outlet	9/28	750		
Copper Creek				
Copper Lake <sup>d</sup>	9/15	980		
Lakina River				
Long Lake <sup>a</sup>	10/24	1225		
Tana River <sup>b</sup>				
Tana R. Clear Channels <sup>a</sup>	8/22	155		
Tana Lake Inlet <sup>a, b</sup>	8/22	75		
West Fork Channels <sup>a</sup>	9/13	35		
Totals <sup>c</sup>		110,821		4,367

<sup>a</sup> Sockeye salmon index stream.

<sup>b</sup> Glacial system.

<sup>c</sup> Chinook salmon index stream.

<sup>d</sup> Count includes numbers of both live and dead fish.

<sup>e</sup> Some peak count totals may include the same group of fish counted during migration as well as on the spawning grounds.

Appendix D.4. Temporally stratified age and sex composition of sockeye salmon in the upper Copper River escapement past the Miles Lake Sonar facility estimated from fish sampled in the personal use and subsistence fisheries near Chitina, 1989.

		Brood Year and Age Group										
		1987	1986		1985			1984		1983		
		0.1	0.2	1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3	Total
Stratum Dates: 5/17–6/30 <sup>a</sup>												
Sampling Dates: 6/2–7/9 <sup>b</sup>												
Female	Percent of Sample	0.0	0.2	0.0	0.4	5.2	0.1	33.0	0.9	0.1	2.6	42.4
	Number in Catch	0	721	0	1,339	18,070	223	115,275	3,157	446	9,093	148,325
Male	Percent of Sample	0.0	0.0	0.1	0.7	7.2	0.0	44.1	0.8	0.1	2.3	55.4
	Number in Catch	0	0	497	2,455	25,295	0	154,178	2,934	223	8,099	193,680
Total	Percent of Sample	0.0	0.2	0.1	1.1	13.0	0.1	78.7	1.7	0.2	4.9	100.0
	Number in Catch	0	721	497	3,793	45,355	223	274,873	6,090	669	17,192	349,415
Stratum Dates: 7/1–8/3 <sup>a</sup>												
Sampling Dates: 7/16–7/30 <sup>b</sup>												
Female	Percent of Sample	0.0	0.0	0.2	0.2	20.8	0.0	21.3	0.0	0.0	0.2	42.7
	Number in Catch	0	0	595	595	53,664	0	55,008	0	0	595	110,456
Male	Percent of Sample	0.2	0.2	1.8	0.0	33.3	0.0	21.2	0.0	0.0	0.0	56.8
	Number in Catch	595	595	4,737	0	86,042	0	54,789	0	0	0	146,757
Total	Percent of Sample	0.2	0.2	2.1	0.2	54.3	0.0	42.7	0.0	0.0	0.2	100.0
	Number in Catch	595	595	5,331	595	140,300	0	110,372	0	0	595	258,382
Strata Combined: 5/17–8/3 <sup>a</sup>		Season Total										
Sampling Dates: 6/2–7/30 <sup>b</sup>												
Female	Percent of Sample	0.0	0.1	0.1	0.3	11.8	0.0	28.0	0.5	0.1	1.6	42.6
	Number in Catch	0	721	595	1,933	71,734	223	170,284	3,157	446	9,688	258,780
Male	Percent of Sample	0.1	0.1	0.9	0.4	18.3	0.0	34.4	0.5	0.0	1.3	56.0
	Number in Catch	595	595	5,234	2,455	111,337	0	208,967	2,934	223	8,099	340,437
Total	Percent of Sample	0.1	0.2	1.0	0.7	30.5	0.0	63.4	1.0	0.1	2.9	100.0
	Number in Catch	595	1,315	5,829	4,388	185,656	223	385,246	6,090	669	17,787	607,797

<sup>a</sup> Dates of passage at Miles Lake estimated from mean travel rates obtained in mark/recapture studies conducted in 1970 and 1972.

<sup>b</sup> Dates fish were sampled in subsistence and personal use fisheries near Chitina.

Appendix D.5. Estimated age and sex composition of chinook salmon carcasses sampled from the Gulkana River, 1989.

		Brood Year and Age Group				
		1985	1984	1983		
		1.2	1.3	1.4	2.3	Total
Sample Size:	138					
Female	Number of Samples	1	34	40	1	76
	Percent of Sample	0.7	24.6	29.0	0.7	55.1
Male	Number of Samples	1	23	37	1	62
	Percent of Sample	0.7	16.7	26.8	0.7	44.9
Total	Number of Samples	2	57	77	2	138
	Percent of Sample	1.4	41.3	55.8	1.4	100.0
	Standard Error	1.0	4.2	4.2	1.0	

## **APPENDIX E**

Age and Sex Data for  
Commercial Salmon Catches from Prince William Sound  
(Districts 221-229).

Appendix E.1. Estimated age and sex composition of sockeye salmon harvested in the Unakwik district commercial common property drift gillnet fishery, 1989.

		Brood Year and Age Group						Total
		1985	1984		1983		1982	
		1.2	1.3	2.2	1.4	2.3	2.4	
Stratum Dates:		6/19–8/16						
Sampling Dates:		6/29						
Sample Size:		427						
Female	Percent of Sample	0.5	50.1	0.5	0.7	4.2	0.0	56.0
	Number in Catch	100	10,731	100	150	903	0	11,985
Male	Percent of Sample	0.2	40.5	0.5	0.0	2.1	0.2	43.6
	Number in Catch	50	8,675	100	0	451	50	9,327
Total	Percent of Sample	0.7	91.1	0.9	0.7	6.3	0.2	100.0
	Number in Catch	150	19,506	201	150	1,354	50	21,412
	Standard Error	87	295	100	87	252	50	

Appendix E.2. Temporally stratified age and sex composition of sockeye salmon harvested in the Coghill District commercial common property drift gillnet and purse seine fisheries, 1989.

		Brood Year and Age Group					
		1985	1984		1983		
		1.2	1.3	2.2	1.4	2.3	Total
Stratum Dates: 6/19-6/28							
Sampling Dates: 6/21							
Sample Size: 573 <sup>a</sup>							
Female	Percent of Sample	0.3	37.2	0.0	0.3	1.2	39.1
	Number in Catch	267	28,469	0	267	936	29,939
Male	Percent of Sample	0.2	58.6	0.2	0.3	1.6	60.9
	Number in Catch	134	44,909	134	267	1,203	46,647
Total	Percent of Sample	0.5	95.8	0.2	0.7	2.8	100.0
	Number in Catch	401	73,378	134	535	2,139	76,586
	Standard Error	231	641	134	267	528	
Stratum Dates: 7/03-9/15							
Sampling Dates: 7/04							
Sample Size: 554 <sup>a, b</sup>							
Female	Percent of Sample	1.1	71.5	1.1	0.2	3.2	77.1
	Number in Catch	342	22,558	342	57	1,025	24,324
Male	Percent of Sample	0.5	20.8	0.7	0.0	0.9	22.9
	Number in Catch	171	6,551	228	0	285	7,234
Total	Percent of Sample	1.6	92.2	1.8	0.2	4.2	100.0
	Number in Catch	513	29,109	570	57	1,310	31,558
	Standard Error	170	359	179	57	268	
Strata Combined: 6/19-9/15							
Sampling Dates: 6/24,7/04							
Sample Size: 1,127							
Female	Percent of Sample	0.6	47.2	0.3	0.3	1.8	50.2
	Number in Catch	609	51,027	342	324	1,961	54,263
Male	Percent of Sample	0.3	47.6	0.3	0.2	1.4	49.8
	Number in Catch	305	51,460	362	267	1,488	53,881
Total	Percent of Sample	0.8	94.8	0.7	0.5	3.2	100.0
	Number in Catch	914	102,487	703	592	3,449	108,144
	Standard Error	287	735	223	273	592	

<sup>a</sup> Samples collected from commercial fishing periods restricted to the use of drift gill nets only.

<sup>b</sup> Age and sex composition of purse seine harvest (2,030 fish) from 7/26--8/28 estimated using drift gill net samples due to lack of appropriate samples for this gear type.

Appendix E.3. Temporally stratified age and sex composition of chum salmon harvested in the Eastern District commercial common property purse seine fishery, 1989.

		Brood Year and Age Group				
		1986	1985	1984	1983	Total
		0.2	0.3	0.4	0.5	
<hr/>						
Stratum Dates: 6/28						
Sampling Dates: 6/28						
Sample Size: 431						
<hr/>						
Female	Percent of Sample	0.0	30.6	13.0	5.8	49.4
	Number in Catch	0	12,954	5,496	2,453	20,903
Male	Percent of Sample	0.2	31.3	12.5	6.5	50.6
	Number in Catch	98	13,248	5,299	2,748	21,394
Total	Percent of Sample	0.2	61.9	25.5	12.3	100.0
	Number in Catch	98	26,203	10,795	5,201	42,297
	Standard Error	98	990	889	670	
<hr/>						
Stratum Dates: 7/05–7/15						
Sampling Dates: 7/13						
Sample Size: 417						
<hr/>						
Female	Percent of Sample	0.2	32.6	16.5	4.6	54.0
	Number in Catch	69	9,330	4,734	1,303	15,435
Male	Percent of Sample	0.0	23.7	14.9	7.4	46.0
	Number in Catch	0	6,792	4,253	2,127	13,172
Total	Percent of Sample	0.2	56.4	31.4	12.0	100.0
	Number in Catch	69	16,121	8,987	3,430	28,607
	Standard Error	69	696	651	456	
<hr/>						
Stratum Dates: 8/10–8/29						
Sampling Dates: 8/12						
Sample Size: 392						
<hr/>						
Female	Percent of Sample	0.5	53.3	3.8	0.0	57.7
	Number in Catch	1,379	144,081	10,341	0	155,800
Male	Percent of Sample	0.0	38.8	3.3	0.3	42.3
	Number in Catch	0	104,786	8,962	689	114,438
Total	Percent of Sample	0.5	92.1	7.1	0.3	100.0
	Number in Catch	1,379	248,867	19,303	689	270,238
	Standard Error	974	3,688	3,520	689	
<hr/>						
Strata Combined: 6/28–8/29						
Sampling Dates: 6/28–8/12						
Sample Size: 1,240						
<hr/>						
Female	Percent of Sample	0.4	48.8	6.0	1.1	56.3
	Number in Catch	1,447	166,365	20,570	3,757	192,139
Male	Percent of Sample	0.0	36.6	5.4	1.6	43.7
	Number in Catch	98	124,826	18,515	5,564	149,003
Total	Percent of Sample	0.5	85.4	11.5	2.7	100.0
	Number in Catch	1,546	291,191	39,085	9,321	341,142
	Standard Error	981	3,882	3,688	1,064	
<hr/>						

Appendix E.4 Temporally stratified age and sex composition of chum salmon harvested in the Northern District commercial common property purse seine fishery, 1989.

		Brood Year and Age Group					
		1986	1985	1984	1983	1982	
		0.2	0.3	0.4	0.5	0.6	Total
Stratum Dates: 6/28-7/05							
Sampling Dates: 6/28-6/29							
Sample Size: 409							
Female	Percent of Sample	0.0	31.3	19.6	3.2	0.2	54.3
	Number in Catch	0	24,729	15,455	2,512	193	42,889
Male	Percent of Sample	0.2	23.0	17.1	5.4	0.0	45.7
	Number in Catch	193	18,160	13,524	4,250	0	36,127
Total	Percent of Sample	0.2	54.3	36.7	8.6	0.2	100.0
	Number in Catch	193	42,889	28,979	6,762	193	79,016
	Standard Error	193	1,949	1,885	1,094	193	
Stratum Dates: 7/12-7/30							
Sampling Dates: 7/27-7/28							
Sample Size: 382							
Female	Percent of Sample	1.3	46.9	6.8	1.6	0.0	56.5
	Number in Catch	679	24,319	3,532	815	0	29,346
Male	Percent of Sample	0.5	34.3	6.5	1.8	0.3	43.5
	Number in Catch	272	17,798	3,397	951	136	22,553
Total	Percent of Sample	1.8	81.2	13.4	3.4	0.3	100.0
	Number in Catch	951	42,117	6,929	1,766	136	51,899
	Standard Error	357	1,040	904	482	136	
Stratum Dates: 8/13-8/24							
Sampling Dates: 8/11							
Sample Size: 403							
Female	Percent of Sample	1.2	53.8	3.5	0.0	0.0	58.6
	Number in Catch	772	33,514	2,162	0	0	36,448
Male	Percent of Sample	0.0	39.5	2.0	0.0	0.0	41.4
	Number in Catch	0	24,556	1,236	0	0	25,792
Total	Percent of Sample	1.2	93.3	5.5	0.0	0.0	100.0
	Number in Catch	772	58,070	3,398	0	0	62,240
	Standard Error	344	776	705	0	0	
Strata Combined: 6/28-8/24							
Sampling Dates: 6/28-8/11							
Sample Size: 1,194							
Female	Percent of Sample	0.8	42.7	10.9	1.7	0.1	56.3
	Number in Catch	1,452	82,562	21,150	3,327	193	108,683
Male	Percent of Sample	0.2	31.3	9.4	2.7	0.1	43.7
	Number in Catch	465	60,514	18,156	5,201	136	84,472
Total	Percent of Sample	1.0	74.1	20.3	4.4	0.2	100.0
	Number in Catch	1,916	143,076	39,306	8,528	329	193,155
	Standard Error	532	2,341	2,207	1,196	236	



Appendix E.5. Temporally stratified age and sex composition of chum salmon harvested in the Coghill District commercial common property gillnet and purse seine fisheries, 1989.

		Brood Year and Age Group				
		1986	1985	1984	1983	
		0.2	0.3	0.4	0.5	Total
Stratum Dates: 6/19–7/03						
Sampling Dates: 6/20						
Sample Size: 390 <sup>a</sup>						
Female	Percent of Sample	0.0	25.6	26.4	4.9	56.9
	Number in Catch	0	23,995	24,715	4,559	53,269
Male	Percent of Sample	0.5	17.9	20.3	4.4	43.1
	Number in Catch	480	16,797	18,956	4,079	40,312
Total	Percent of Sample	0.5	43.6	46.7	9.2	100.0
	Number in Catch	480	40,792	43,671	8,638	93,581
	Standard Error	339	2,353	2,367	1,373	
Stratum Dates: 7/26–9/06						
Sampling Dates: 7/28						
Sample Size: 389 <sup>b</sup>						
Female	Percent of Sample	1.5	64.0	3.1	0.0	68.6
	Number in Catch	3,480	144,434	6,961	0	154,875
Male	Percent of Sample	0.0	29.6	1.8	0.0	31.4
	Number in Catch	0	66,707	4,060	0	70,767
Total	Percent of Sample	1.5	93.6	4.9	0.0	100.0
	Number in Catch	3,480	211,141	11,021	0	225,642
	Standard Error	1,412	2,809	2,469	0	
Strata Combined: 6/19–9/06						
Sampling Dates: 6/20–7/28						
Sample Size: 779						
Female	Percent of Sample	1.1	52.8	9.9	1.4	65.2
	Number in Catch	3,480	168,429	31,676	4,559	208,144
Male	Percent of Sample	0.2	26.2	7.2	1.3	34.8
	Number in Catch	480	83,503	23,017	4,079	111,079
Total	Percent of Sample	1.2	78.9	17.1	2.7	100.0
	Number in Catch	3,960	251,932	54,692	8,638	319,223
	Standard Error	1,452	3,664	3,420	1,373	

<sup>a</sup> Commercial fishery restricted to drift gill nets only.

<sup>b</sup> Age composition for this stratum was estimated for gill net and purse seine catches combined due to significant intermixing of fish from the two gear types by fishermen and processors.

Appendix E.6. Temporally stratified age and sex composition of chum salmon harvested in the Main Bay hatchery cost recovery purse seine fishery, Eshamy District, 1989.

		Brood Year and Age Group					Total
		1987	1986	1985	1984	1983	
		0.1	0.2	0.3	0.4	0.5	
Stratum Dates: 6/14–6/30							
Sampling Dates: 6/21							
Sample Size: 398							
Female	Percent of Sample	0.0	0.5	14.6	32.2	2.0	49.2
	Number in Catch	0	246	7,129	15,733	983	24,091
Male	Percent of Sample	0.0	0.5	11.6	34.9	3.8	50.8
	Number in Catch	0	246	5,654	17,085	1,844	24,829
Total	Percent of Sample	0.0	1.0	26.1	67.1	5.8	100.0
	Number in Catch	0	492	12,783	32,818	2,827	48,920
	Standard Error	0	245	1,079	1,154	573	
Stratum Dates: 7/01–7/15							
Sampling Dates: 7/07							
Sample Size: 393							
Female	Percent of Sample	0.3	3.8	30.0	17.8	1.3	53.2
	Number in Catch	114	1,710	13,452	7,980	570	23,826
Male	Percent of Sample	0.0	2.3	22.6	21.4	0.5	46.8
	Number in Catch	0	1,026	10,146	9,576	228	20,976
Total	Percent of Sample	0.3	6.1	52.7	39.2	1.8	100.0
	Number in Catch	114	2,736	23,598	17,556	798	44,802
	Standard Error	114	542	1,130	1,105	299	
Stratum Dates: 7/16–8/26							
Sampling Dates: 7/20							
Sample Size: 354							
Female	Percent of Sample	0.0	4.2	44.1	20.1	0.3	68.6
	Number in Catch	0	385	4,005	1,823	26	6,239
Male	Percent of Sample	0.0	2.0	18.9	10.2	0.3	31.4
	Number in Catch	0	180	1,720	924	26	2,850
Total	Percent of Sample	0.0	6.2	63.0	30.2	0.6	100.0
	Number in Catch	0	565	5,726	2,747	51	9,089
	Standard Error	0	117	234	222	36	
Strata Combined: 6/14–8/26							
Sampling Dates: 6/21–7/20							
Sample Size: 1,145							
Female	Percent of Sample	0.1	2.3	23.9	24.8	1.5	52.7
	Number in Catch	114	2,341	24,586	25,536	1,579	54,156
Male	Percent of Sample	0.0	1.4	17.0	26.8	2.0	47.3
	Number in Catch	0	1,452	17,520	27,585	2,097	48,655
Total	Percent of Sample	0.1	3.7	41.0	51.7	3.6	100.0
	Number in Catch	114	3,793	42,107	53,121	3,676	102,811
	Standard Error	114	606	1,579	1,613	647	

Appendix E.7. Estimated age and sex composition of chum salmon harvested in the  
Southeastern District commercial common property purse seine fishery, 1989.

		Brood Year and Age Group				Total
		1986	1985	1984	1983	
		0.2	0.3	0.4	0.5	
Stratum Dates:		7/12-8/11				
Sampling Dates:		7/28				
Sample Size:		136				
Female	Percent of Sample	2.2	52.2	6.6	2.2	63.2
	Number in Catch	17	399	51	17	484
Male	Percent of Sample	0.0	30.9	5.1	0.7	36.8
	Number in Catch	0	236	39	6	281
Total	Percent of Sample	2.2	83.1	11.8	2.9	100.0
	Number in Catch	17	636	90	23	765
	Standard Error	10	25	21	11	

Appendix E.8. Temporally stratified age and sex composition of coho salmon harvested in the Coghill District commercial common property drift gillnet and purse seine fisheries, 1989.<sup>a</sup>

		Brood Year and Age Group			Total
		1986	1985	1984	
		1.1	2.1	3.1	
<hr/>					
Stratum Dates:	6/19–8/27				
Sampling Dates:	8/16–8/19				
Sample Size:	385				
Female	Percent of Sample	46.8	7.3	0.3	54.3
	Number in Catch	28,231	4,391	157	32,779
Male	Percent of Sample	38.4	7.0	0.3	45.7
	Number in Catch	23,212	4,235	157	27,604
Total	Percent of Sample	85.2	14.3	0.5	100.0
	Number in Catch	51,443	8,626	314	60,383
	Standard Error	1,094	1,078	222	
<hr/>					
Stratum Dates:	8/28–9/25				
Sampling Dates:	9/01				
Sample Size:	453				
Female	Percent of Sample	56.7	0.2	0.2	57.2
	Number in Catch	33,948	132	132	34,212
Male	Percent of Sample	42.6	0.2	0.0	42.8
	Number in Catch	25,494	132	0	25,626
Total	Percent of Sample	99.3	0.4	0.2	100.0
	Number in Catch	59,442	264	132	59,838
	Standard Error	228	187	132	
<hr/>					
Strata Combined:	6/19–9/25				
Sampling Dates:	8/16–9/01				
Sample Size:	838				
Female	Percent of Sample	51.7	3.8	0.2	55.7
	Number in Catch	62,179	4,524	289	66,991
Male	Percent of Sample	40.5	3.6	0.1	44.3
	Number in Catch	48,706	4,367	157	53,230
Total	Percent of Sample	92.2	7.4	0.4	100.0
	Number in Catch	110,885	8,890	446	120,221
	Standard Error	1,118	1,094	258	

<sup>a</sup> Age composition for this district was estimated for gill net and purse seine catches combined due to significant intermixing of fish from the two gear types by fishermen and processors.



## **APPENDIX F**

Salmon Escapements to Coastal Streams in Prince William Sound.

Appendix F.1. Daily escapement counts of sockeye, chinook, pink, and chum salmon through the Coghill River weir, 1989.

Date	Sockeye		Chinook		Chum		Pink	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
06/12	4	4						
06/13	0	4						
06/14	4	8						
06/15	1	9						
06/16	4	13						
06/17	2	15						
06/18	7	22						
06/19	361	383						
06/20	639	1022					1	1
06/21	141	1163					2	3
06/22	6	1169						3
06/23	119	1288			4	4		3
06/24	32	1320			1	5		3
06/25	13	1333				5		3
06/26	51	1384			1	6		3
06/27	168	1552				6		3
06/28	199	1751				6		3
06/29	572	2323				6		3
06/30	1,082	3405				6		3
07/01	601	4006	1	1		6		3
07/02	501	4507	0	1		6	4	7
07/03	1,346	5853	0	1	2	8		7
07/04	761	6614	1	2		8	2	9
07/05	339	6953	0	2		8		9
07/06	422	7375	1	3	1	9	10	19
07/07	339	7714	0	3	1	10	27	46
07/08	1,168	8882	0	3	3	13	44	90
07/09	486	9368	2	5	1	14	29	119
07/10	3,683	13051	1	6	16	30	372	491
07/11	5,783	18834	4	10	18	48	1692	2183
07/12	2,900	21734	1	11	11	59	757	2940
07/13	5,534	27268	0	11	19	78	3272	6212
07/14	3,580	30848	3	14	41	119	3847	10059
07/15	1,388	32236	4	18	37	156	1345	11404
07/16	641	32877	1	19	13	169	458	11862
07/17	325	33202	1	20	7	176	768	12630
07/18	246	33448	1	21	8	184	1571	14201
07/19	155	33603	0	21	16	200	1777	15978
07/20	182	33785	0	21	23	223	1075	17053
07/21	1,432	35217	3	24	27	250	1477	18530
07/22	726	35943	1	25	35	285	3089	21619
07/23	692	36635	1	26	47	332	3825	25444
07/24	713	37348	1	27	49	381	5526	30970
07/25	308	37656	5	32	32	413	2868	33838
07/26	95	37751	2	34	13	426	1195	35033
Total		37,751		34		426		35,033

Appendix F.2. Daily escapement counts of sockeye, chinook, chum, and pink salmon through the weir at the head of Eshamy Lagoon, 1989.

Date	Sockeye		Chinook		Chum		Pink	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
06/15	0	0						
06/16	0	0						
06/17	0	0						
06/18	23	23						
06/19	2	25						
06/20	8	33						
06/21	0	33						
06/22	1	34						
06/23	1	35						
06/24	2	37						
06/25	0	37						
06/26	0	37						
06/27	25	62						
06/28	22	84						
06/29	185	269						
06/30	9	278						
07/01	0	278						
07/02	0	278						
07/03	0	278						
07/04	0	278						
07/05	0	278						
07/06 <sup>a</sup>	50	328			2	2		
07/07	3	331				2		
07/08	0	331				2		
07/09	372	703				2		
07/10	7	710				2		
07/11	11	721				2		
07/12	127	848			2	4		
07/13	63	911			3	7		
07/14	3	914				7		
07/15	0	914				7		
07/16	175	1,089			4	11		
07/17	88	1,177				11		
07/18	341	1,518			6	17		
07/19	102	1,620			2	19		
07/20	150	1,770			11	30		
07/21	190	1,960			38	68		
07/22	80	2,040			18	86		
07/23	163	2,203			15	101	2	2
07/24	4,680	6,883			32	133	6	8
07/25	6,660	13,543			23	156	65	73
07/26	3,179	16,722			5	161	23	96
07/27	742	17,464			5	166	4	100
07/28	557	18,021			5	171	6	106
07/29	470	18,491			3	174	3	109
07/30	4,800	23,291			14	188	76	185
07/31	1,453	24,744			3	191	16	201
08/01	1,474	26,218			3	194	9	210
08/02	883	27,101			0	194	3	213
08/03	1,304	28,405			4	198	12	225

- Continued -



Appendix F.2. (Pg 2 of 2)

Date	Sockeye		Chinook		Chum		Pink	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
08/04	812	29,217			0	198	31	256
08/05	1,028	30,245			1	199	16	272
08/06	352	30,597			0	199	2	274
08/07	1,207	31,804			2	201	26	300
08/08	1,216	33,020	1	1	0	201	58	358
08/09	711	33,731		1	0	201	42	400
08/10	399	34,130		1	0	201	64	464
08/11	957	35,087		1		201	78	542
08/12	525	35,612		1		201	23	565
08/13	1,189	36,801		1		201	124	689
08/14	1,323	38,124		1		201	122	811
08/15	448	38,572		1		201	96	907
08/16	1,040	39,612		1	1	202	140	1,047
08/17	743	40,355		1		202	147	1,194
08/18	2,038	42,393		1		202	874	2,068
08/19	2,050	44,443		1		202	560	2,628
08/20	1,206	45,649		1		202	272	2,900
08/21	1,301	46,950		1		202	620	3,520
08/22	1,609	48,559		1		202	712	4,232
08/23	362	48,921		1		202	131	4,363
08/24	746	49,667		1	0	202	269	4,632
08/25	1,706	51,373		1		202	666	5,298
08/26	759	52,132		1	1	203	188	5,486
08/27	315	52,447		1	3	206	77	5,563
08/28	385	52,832		1	1	207	58	5,621
08/29 <sup>b</sup>	3,500	56,332		1		207	450	6,071
08/30	254	56,586		1	1	208	68	6,139
08/31	597	57,183		1	2	210	144	6,283
09/01	238	57,421		1		210	58	6,341
09/02	150	57,571		1		210	54	6,395
09/03	58	57,629		1		210	136	6,531
09/04	122	57,751		1		210	297	6,828
09/05	99	57,850		1		210	233	7,061
09/06	46	57,896		1		210	124	7,185
09/07	81	57,977		1		210	97	7,282
09/08	150	58,127		1		210	500	7,782
Totals		58,127		1		210		7,782

<sup>a</sup> Adult weir installed. Counts prior to this date were obtained from FRED Division smolt weir.

<sup>b</sup> Weir open for 8 hr due to high water.

Appendix F.3. Daily escapement counts of sockeye, chinook, coho, pink, and chum salmon through the Jackpot weir, 1989.

Date	Sockeye		Chinook		Coho		Pink		Chum	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
01-Jul	242	242								
02-Jul	67	309								
03-Jul	6	315								
04-Jul	48	363								
05-Jul	799	1162								
06-Jul	17	1179								
07-Jul	73	1252	1	1						
08-Jul	37	1289		1						
09-Jul	119	1408	1	2						
10-Jul	136	1544		2						
11-Jul	205	1749		2						
12-Jul	0	1749		2						
13-Jul	0	1749		2						
14-Jul	20	1769		2						
15-Jul	0	1769		2						
16-Jul	0	1769	1	3						
17-Jul	82	1851		3			5	5		
18-Jul	11	1862		3			5	10		
19-Jul	29	1891		3			7	17		
20-Jul	45	1936		3			7	24		
21-Jul	88	2024		3			65	89		
22-Jul	65	2089		3			195	284	1	1
23-Jul	6	2095		3			18	302		1
24-Jul	191	2286		3			465	767	4	5
25-Jul	465	2751		3	12	12	1008	1775	5	10
26-Jul	5	2756		3		12	33	1808		10
27-Jul	32	2788		3		12	15	1823		10
28-Jul	23	2811		3	1	13	9	1832	1	11
29-Jul	24	2835		3	10	23	186	2018	0	11
30-Jul	0	2835		3		23		2018		11
31-Jul	18	2853	1	4	1	24	307	2325	3	14
01-Aug	24	2877		4	1	25	182	2507	1	15
02-Aug	15	2892		4	1	26	241	2748	3	18
03-Aug	16	2908		4	12	38	249	2997	1	19
04-Aug	15	2923	1	5	9	47	470	3467		19
05-Aug	12	2935	1	6	21	68	816	4283		19
06-Aug	3	2938		6	2	70	74	4357		19
07-Aug	11	2949	2	8	129	199	4212	8569	5	24
08-Aug	6	2955		8	16	215	867	9436	4	28
09-Aug	14	2969		8	19	234	1006	10442	2	30
10-Aug	3	2972		8	24	258	356	10798	1	31
11-Aug	3	2975		8	2	260	106	10904	3	34
12-Aug	5	2980		8	2	262	30	10934	0	34
13-Aug	3	2983		8	0	262	99	11033	0	34
14-Aug <sup>a</sup>	0	2983		8	0	262	73	11106	0	34
Totals		2,983		8		262		11,106		34

<sup>a</sup> Totals do not include an estimated 1,500 fish of unknown species holding below the weir at removal.

Appendix F.4. Sockeye salmon aerial escapement counts from selected systems in Prince William Sound, 1989.<sup>a</sup>

Stream Name	Stream Number	Weekly Count (week ending dates)								
		08-Jul	15-Jul	22-Jul	29-Jul	05-Aug	12-Aug	19-Aug	26-Aug	16-Sep
Robe River <sup>b</sup>	137									
Billy's Hole	218		200	400	2,500		600	80	50	
Red Lake	300				1,000		400	200	100	
Halferty Creek	454							120		
Cochrane Creek	461						70			
Shrode Lake	476		40	200	200		1,070	280		
Jackpot Lakes	608	1,500		1,900	3,000	2,200	200	50		
Bainbridge	630	70		300	1,600	800	300	50		5
Point Creek <sup>b</sup>	702									
Cabin Creek <sup>b</sup>	747									
Udall Creek <sup>b</sup>	770									
Pautzke Creek <sup>b</sup>	775									
Total		1,570	240	2,800	8,300	3,000	2,640	780	150	5

<sup>a</sup> Counts contained in this table are obtained in conjunction with the regular pink and chum aerial survey program. Many of these sockeye systems are difficult to survey by air, and thus the counts do not necessarily represent total live abundance at a particular time.

<sup>b</sup> No sockeye counts obtained in 1989.



## Appendix F.5. (Pg 2 of 6)

District	Stream Number Name	Week Ending Date															Total	Adjusted Total	
		6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23	9/30			
Northern	204 Heather Bay	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	
	208 Granite Cove	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	
	209 Useless Creek	0	0	0	0	0	0	NS	20	50	200	NS	NS	0	NS	NS	270	200	peak
	210 Elf Creek	0	0	0	0	0	0	NS	0	20	100	NS	NS	0	NS	NS	120	100	peak
	213 Bench Mark Creek	0	0	0	0	0	150	600	400	200	200	NS	NS	0	NS	NS	1,550	710	
	214 Long Creek	0	0	0	0	0	0	1,100	2,200	4,100	2,400	NS	NS	0	NS	NS	9,800	4,580	
	216 Vanishing Creek	0	0	0	0	0	600	3,100	3,400	1,600	300	NS	NS	0	NS	NS	9,000	3,960	
	217 Spring Creek	0	0	0	0	0	50	6,400	4,000	3,500	2,100	NS	NS	0	NS	NS	16,050	6,450	
	218 Billy's Creek	0	0	0	0	0	0	1,300	0	0	0	NS	NS	0	NS	NS	1,300	1,300	
	221 Eickelberg Creek	0	0	0	0	200	0	2,000	1,500	600	300	NS	NS	0	NS	NS	4,600	2,000	peak
	Columbia/Long 222-10	0	0	0	0	200	800	14,500	11,520	10,070	5,600	0	0	0	0	0	42,690	19,300	
	224 Backyard Creek	0	0	0	0	0	350	2,000	8,000	3,400	3,000	NS	NS	10	NS	NS	16,760	8,120	
	227 Granite Creek	0	0	0	0	0	0	4,200	2,000	1,700	200	NS	NS	NS	NS	NS	8,100	5,760	
	229 Cedar Creek	0	0	200	0	50	700	4,500	6,000	4,000	1,500	NS	NS	NS	NS	NS	16,950	6,900	
	232 Delta Creek	0	0	0	0	0	0	0	0	0	100	NS	NS	NS	NS	NS	100	100	
	233 Surplus Creek	0	0	0	0	0	0	600	500	100	100	NS	NS	NS	NS	NS	1,300	880	
	234 Wells River	0	0	0	0	6,000	19,000	10,000	27,000	6,400	4,900	NS	NS	NS	NS	NS	73,300	32,920	
	257 Complex Creek	NS	0	0	0	0	0	10	5	0	20	NS	NS	NS	NS	NS	35	20	
	258 Williams Creek	NS	0	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0	0	
	259 Jonah Creek	NS	0	0	10	200	200	2,200	7,180	5,400	3,700	NS	NS	NS	NS	NS	18,890	7,560	
	263 Waterfall Creek	NS	0	0	0	0	0	200	0	0	50	NS	NS	NS	NS	NS	250	220	
	264 Siwash River	NS	0	0	0	0	0	700	100	1,500	3,400	NS	NS	NS	NS	NS	5,700	3,400	peak
	265 Unakwik Creek	NS	0	0	0	0	0	30	10	0	300	NS	NS	NS	NS	NS	340	300	peak
	Wells/Unakwik 222-20	0	0	200	10	6,250	20,250	24,440	50,795	22,500	17,270	0	0	10	0	0	141,725	66,180	
	273 Schoppe Creek	NS	0	0	0	20	200	200	0	0	300	NS	NS	NS	NS	NS	720	300	
	276 Black Bear Creek	NS	0	0	0	400	200	1,300	0	1,000	2,000	NS	NS	NS	NS	NS	4,900	2,200	
	277 Dead Creek	NS	0	0	0	0	10	200	0	0	20	NS	NS	NS	NS	NS	230	200	peak
	278 Comeback Creek	NS	0	0	0	0	0	50	100	100	300	NS	NS	NS	NS	NS	550	300	peak
	279 Canyon Creek	NS	0	0	0	100	500	2,200	0	100	2,300	NS	NS	NS	NS	NS	5,200	2,300	peak
	282 Good Creek	NS	0	0	0	0	50	0	0	0	0	NS	NS	NS	NS	NS	50	50	
	283 Bad Creek	NS	0	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0	0	
	289 Derickson Creek	NS	0	0	0	0	0	1,700	11,000	15,000	9,000	NS	NS	NS	NS	NS	36,700	15,700	
	Eaglek 222-30	0	0	0	0	520	960	5,650	11,100	16,200	13,920	0	0	0	0	0	48,350	21,050	
	242 Cowpen Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	
	Unakwik District 222-50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Northern District TOTAL		0	0	200	10	6,970	22,010	44,590	73,415	48,770	36,790	0	0	10	0	0	232,765	106,530	
Coghill	414 Harrison Creek	NS	0	0	0	0	0	NS	20	100	NS	NS	NS	NS	NS	NS	120	100	peak
	417 Hobo Creek	NS	0	0	0	0	0	NS	150	500	NS	NS	NS	NS	NS	NS	650	500	peak
	421 Mill Creek	NS	0	0	NS	100	50	NS	0	0	NS	NS	NS	NS	NS	NS	150	120	
	424 Old Creek	NS	0	0	0	0	0	NS	0	50	NS	NS	NS	NS	NS	NS	50	50	
	425 Hummer Creek	NS	0	0	0	0	0	NS	0	700	NS	NS	NS	NS	NS	NS	700	700	
	428 Pirate Creek	NS	0	0	0	0	0	NS	0	100	NS	NS	NS	NS	NS	NS	100	100	
	430 Meacham Creek	NS	0	0	0	0	1,000	NS	3,000	4,000	NS	NS	NS	NS	NS	NS	8,000	4,900	
	432 Swanson Creek	NS	0	0	0	200	700	NS	13,000	8,000	NS	NS	NS	NS	NS	NS	21,900	13,000	peak
	W. Port Wells 223-10	0	0	0	0	300	1,750	0	16,170	13,450	0	0	0	0	0	0	31,670	19,470	
	303 Triple Creek	NS	0	0	0	0	0	NS	500	700	700	NS	NS	NS	NS	NS	1,900	1,060	
	307 Village Creek	NS	0	0	0	0	0	NS	600	450	500	NS	NS	NS	NS	NS	1,550	980	
	Easter Passage 223-20	0	0	0	0	0	0	0	1,100	1,150	1,200	0	0	0	0	0	3,450	2,040	
	310 Golden Lagoon	NS	0	0	0	0	0	NS	0	0	0	NS	NS	NS	NS	NS	0	0	
	314 Avery River	NS	0	0	0	0	0	NS	0	0	0	NS	NS	NS	NS	NS	0	0	
	322 Coghill River - Below Weir	NS	0	0	0	2,000	1,500	NS	16,000	24,000	NS	NS	NS	NS	NS	NS	43,500	24,000	peak
	3221 Coghill River - Lake Court	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	
	E. Port Wells 223-30	0	0	0	0	2,000	1,500	0	16,000	24,000	0	0	0	0	0	0	43,500	24,000	
Coghill District TOTAL		0	0	0	0	2,300	3,250	0	33,270	38,600	1,200	0	0	0	0	0	78,620	45,510	

-Continued-

## Appendix F.5. (Pg 3 of 6)

District	Stream Number Name	Week Ending Date															Total	Adjusted Total
		6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23	9/30		
Northwestern	435 Logging Camp Creek	NS	0	0	0	0	0	NS	100	100	NS	NS	NS	NS	NS	NS	200	140
	450 Tebenkoff Creek	NS	0	0	0	0	300	NS	600	300	NS	NS	NS	NS	NS	NS	1,200	930
	451 Blackstone Creek	NS	0	0	0	0	300	NS	150	600	NS	NS	NS	NS	NS	NS	1,050	780
	454 Halferty Creek	NS	0	0	0	0	100	NS	600	5,000	NS	NS	NS	NS	NS	NS	5,700	5,000 peak
	455 Paulson Creek	NS	0	0	300	1,000	1,200	NS	3,000	2,000	NS	NS	NS	NS	NS	NS	7,500	4,020
	458 Parks Creek	NS	0	0	0	0	0	NS	670	1,100	NS	NS	NS	NS	NS	NS	1,770	1,110
	461 Cochrane Creek	NS	0	0	0	0	200	NS	1,500	800	NS	NS	NS	NS	NS	NS	2,500	1,520
	469 Wickett Creek	NS	0	0	30	0	50	NS	2,000	1,100	NS	NS	NS	NS	NS	NS	3,180	2,000 peak
	Passage/Cochrane 224-10	0	0	0	330	1,000	2,150	0	8,620	11,000	0	0	0	0	0	0	23,100	15,500
	471 Narrows Creek	NS	0	0	0	0	0	NS	200	200	NS	NS	NS	NS	NS	NS	400	280
	476 Shrode Creek	NS	0	0	0	1,300	2,000	NS	30,000	26,000	NS	NS	NS	NS	NS	NS	59,300	30,900
	479 Culross Creek	NS	0	0	20	0	200	NS	2,100	400	NS	NS	NS	NS	NS	NS	2,720	2,100 peak
	Culross Pass 224-30	0	0	0	20	1,300	2,200	0	32,300	26,600	0	0	0	0	0	0	62,420	33,280
	480 Mink Creek	NS	0	0	1,000	400	1,000	NS	6,500	5,000	NS	NS	NS	0	NS	NS	13,900	7,660
	484 E. Finger Creek	NS	0	0	112	100	200	NS	900	600	NS	NS	NS	0	NS	NS	1,912	1,050
	485 W. Finger Creek	NS	0	0	1,000	500	1,000	NS	3,700	3,500	NS	NS	NS	0	NS	NS	9,700	5,420
	493 Most Creek	NS	0	0	0	10	0	NS	0	350	NS	NS	NS	0	NS	NS	360	350 peak
	495 Chimevisky Lagoon	NS	0	0	700	0	100	NS	500	500	NS	NS	NS	5	NS	NS	1,805	1,560
	498 McClure Creek	NS	0	0	0	0	0	NS	3,000	1,800	NS	NS	NS	0	NS	NS	4,800	3,720
	Nellie Juan 224-40	0	0	0	2,812	1,010	2,300	0	14,600	11,750	0	0	0	5	0	0	32,477	19,760
Northwestern District TOTAL		0	0	0	3,162	3,310	6,650	0	55,520	49,350	0	0	0	5	0	0	117,997	68,540
Eshamy	506 Loomis Creek	NS	NS	NS	0	0	0	0	300	1,700	900	NS	3,000	0	NS	NS	5,900	3,320
	507 Gunboat Creek	NS	NS	NS	0	0	0	100	4,000	4,000	3,200	NS	2,500	0	NS	NS	13,800	6,720
	508 North Shore - Eshamy Lagoon	NS	NS	NS	NS	0	0	400	300	500	1,200	NS	5,000	50	NS	NS	7,450	5,000 peak
	510 Elishansky Creek	NS	NS	NS	NS	50	0	900	3,000	1,200	900	NS	3,000	4	NS	NS	9,054	4,430
	511 Eshamy - Below Weir	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	NS	0	0
	5111 Eshamy River - Weir	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
	Eshamy 225-30	0	0	0	0	50	0	1,400	7,600	7,400	6,200	0	13,500	54	0	0	36,204	19,470
Eshamy District TOTAL		0	0	0	0	50	0	1,400	7,600	7,400	6,200	0	13,500	54	0	0	36,204	19,470

-Continued-

Appendix F.5. (Pg 4 of 6)

District	Stream		Week Ending Date														Total	Adjusted Total		
	Number	Name	6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23			9/30	
Southwestern	601	Paddy Creek	NS	NS	0	0	0	600	1,600	1,300	500	700	NS	1,200	15	NS	NS	5,915	3,110	
	602	Nacktan Creek	NS	NS	0	0	0	300	300	500	100	600	NS	1,100	20	NS	NS	2,920	1,690	
	603	Ewan Creek	NS	NS	0	0	0	200	1,800	5,000	4,000	NS	NS	700	0	NS	NS	11,700	6,680	
	604	Erb Creek	NS	NS	0	NS	600	600	2,500	7,000	2,000	NS	NS	700	0	NS	NS	13,400	7,000	peak
	608	Jackpot River	NS	NS	0	NS	0	0	3,000	34,000	12,000	NS	NS	9,000	0	NS	NS	58,000	34,000	peak
	610	Kompkoff River	NS	NS	0	NS	0	75	800	2,000	800	NS	NS	100	0	NS	NS	3,775	2,000	peak
	611	Jackpot Bay – West Arm	NS	NS	0	NS	0	200	200	50	50	NS	NS	50	0	NS	NS	550	380	
	612	Jackpot Bay – West Arm	NS	NS	0	NS	120	100	700	300	30	NS	NS	200	0	NS	NS	1,450	740	
	613	Jackson Creek	NS	NS	0	500	3,000	10,000	13,000	28,000	7,000	NS	NS	900	0	NS	NS	62,400	28,420	
	621	Totemoff Creek	NS	NS	0	NS	0	100	1,500	4,500	3,800	NS	NS	1,800	10	NS	NS	11,710	6,980	
	623	Brizgaloff Creek	NS	NS	0	0	0	0	2,000	1,000	500	NS	NS	900	0	NS	NS	4,400	3,520	
	630	Bainbridge Creek	NS	NS	0	NS	2,000	800	4,400	14,000	11,020	NS	NS	3,900	5	NS	NS	36,125	21,620	
	632	Claw Creek	NS	NS	0	NS	200	200	700	700	900	NS	NS	800	0	NS	NS	3,500	2,200	
	633	Pablo Creek	NS	NS	0	NS	1,000	600	1,134	4,500	2,000	NS	NS	1,200	2	NS	NS	10,436	6,050	
	634	Whale Bay – B. Head – S. Arm	NS	NS	0	NS	0	0	10	200	150	NS	NS	800	0	NS	NS	1,160	850	
	636	Whale Creek	NS	NS	0	NS	400	210	600	900	500	NS	NS	1,300	5	NS	NS	3,915	2,530	
		Chenega 226–20	0	0	0	500	7,320	13,985	34,244	103,950	45,350	1,300	0	24,650	57	0	0	231,356	127,770	
		682 Snug Harbor	NS	NS	0	NS	0	0	200	3,500	3,000	NS	NS	4,000	0	NS	NS	10,700	7,200	
		Knight Island 226–30	0	0	0	0	0	0	200	3,500	3,000	0	0	4,000	0	0	0	10,700	7,200	
		655 Johnson Creek	NS	NS	0	0	100	0	900	1,000	400	NS	NS	8,000	0	NS	NS	10,400	8,000	peak
		656 Halverson Creek	NS	NS	0	0	200	200	1,200	800	700	NS	NS	7,000	35	NS	NS	10,135	7,250	
	665 Bjorne Creek	NS	NS	0	NS	0	0	0	100	10	NS	NS	1,700	60	NS	NS	1,870	1,700	peak	
	666 O'Brien Creek	NS	NS	0	NS	0	0	0	200	50	NS	NS	3,700	70	NS	NS	4,020	3,700	peak	
	670 Montgomery Creek	NS	NS	NS	NS	0	0	0	140	0	NS	NS	1,100	120	NS	NS	1,360	1,100	peak	
	672 Latouche Island – S. Side	NS	NS	0	NS	0	0	0	0	0	NS	NS	500	0	NS	NS	500	500		
	673 Falls Creek	NS	NS	0	NS	0	0	174	1,500	1,000	NS	NS	4,000	15	NS	NS	6,689	4,780		
	676 Horseshoe Creek	NS	NS	0	NS	0	0	100	2,300	2,000	NS	NS	2,500	0	NS	NS	6,900	4,620		
	677 Hayden Creek	NS	NS	0	NS	0	0	0	57	150	NS	NS	2,200	0	NS	NS	2,407	2,200	peak	
	Bainbridge/Latouche 226–40	0	0	0	0	300	200	2,374	6,097	4,310	0	0	30,700	300	0	0	42,281	33,850		
	653 Hogg Creek	NS	NS	0	NS	NS	400	5,400	4,300	2,500	NS	NS	1,400	30	NS	NS	14,030	7,410		
	Port Bainbridge 226–50	0	0	0	0	0	400	5,400	4,300	2,500	0	0	1,400	30	0	0	14,030	7,410		
Southwestern District TOTAL			0	0	0	500	7,620	14,585	42,218	117,847	55,160	1,300	0	60,750	387	0	0	390,367	176,230	

-Continued-

Appendix F.5. (Pg 5 of 6)

District	Stream		Week Ending Date														Total	Adjusted Total	
	Number	Name	6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23			9/30
Montague	702	Point Creek	NS	NS	NS	NS	0	0	100		1,820	NS	NS	600	NS	NS	NS	2,520	2,450
	703	Clam Beach Creek	NS	NS	NS	NS	0	0	100		550	NS	NS	60	NS	NS	NS	710	750
	707	MacLeod Creek	NS	NS	NS	NS	0	300	2,900		5,600	NS	NS	4,100	NS	NS	NS	12,900	10,920
	710	Hanning Creek	NS	NS	NS	NS	0	650	4,500	8,300	4,300	NS	NS	2,000	NS	NS	NS	19,750	10,810
	711	Quadra Creek	NS	NS	NS	NS	200	1,900	7,400		4,700	NS	NS	2,300	NS	NS	NS	16,500	11,940
	717	Montague Island – West Shore	NS	NS	NS	NS	0	0	3,000	4,900	2,400	NS	NS	1,500	NS	NS	NS	11,800	8,080
	718	Montague Island – West Shore	NS	NS	NS	NS	0	0	2,500	2,300	2,400	NS	NS	1,600	NS	NS	NS	8,800	6,620
	719	Montague Island – West Shore	NS	NS	NS	NS	0	600	3,500	4,300	1,100	NS	NS	1,400	NS	NS	NS	10,900	5,720
	722	Montague Is. – Glacier Str.	NS	NS	NS	NS	0	0	400	200	60	NS	NS		NS	NS	NS	660	500
	724	Montague Is. – Glacier Str.	NS	NS	NS	NS	0	0	0	0	NS	NS	NS	400	NS	NS	NS	400	400
	725	Montague Island – West Shore	NS	NS	NS	NS	0	0	0	NS	3,700	NS	NS	500	NS	NS	NS	4,200	7,800
726	Montague Creek	NS	NS	NS	NS	0	0	2,000	280	800	NS	NS		NS	NS	NS	3,080	2,430	
S. Montague 227–10		0	0	0	0	200	3,450	26,400	20,280	27,430	0	0	14,460	0	0	0	92,220	68,420	
738	Russell Creek	NS	NS	NS	NS	0	300	2,600	1,310	2,140	NS	NS	1,100	30	NS	NS	7,480	4,470	
739	Swamp Creek	NS	NS	NS	NS	50	2,500	8,000	13,710	9,800	NS	NS	5,300	450	NS	NS	39,810	21,990	
740	Kelez Creek	NS	NS	NS	NS	0	0	2,400	2,400	1,300	NS	NS	3,200	0	NS	NS	9,300	6,960	
741	Chalmers River	NS	NS	NS	NS	800	3,000	5,100	8,820	6,700	NS	NS	1,400	55	NS	NS	25,875	14,070	
744	Wilby Creek	NS	NS	NS	NS	0	50	4,700	1,400	800	NS	NS	1,000	0	NS	NS	7,950	4,700	
745	Wild Creek	NS	NS	NS	NS	100	300	1,100	4,710	2,500	NS	NS	900	10	NS	NS	9,620	5,270	
746	Schuman Creek	NS	NS	NS	NS	0	100	700	700	NS	NS	NS	800	0	NS	NS	2,300	1,880	
747	Cabin Creek	NS	NS	NS	NS	200	1,200	10,700	21,750	4,700	NS	NS	8,400	200	NS	NS	47,150	24,220	
748	Gilmour Creek	NS	NS	NS	NS	0	0	500	30	400	NS	NS	700	0	NS	NS	1,630	1,390	
749	Shad Creek	NS	NS	NS	NS	0	200	1,600	3,900	2,100	NS	NS	2,000	0	NS	NS	9,800	5,680	
752	Stockdale Creek	NS	NS	NS	NS	0	0	1,300	3,000	2,100	1,600	NS	1,800	0	NS	NS	9,800	5,380	
753	Stockdale Bay	NS	NS	NS	NS	0	0	1,100	1,200	200	NS	NS	600	0	NS	NS	3,100	2,220	
754	Dry Creek	NS	NS	NS	NS	0	0	0	310	100	NS	NS	300	0	NS	NS	710	630	
758	Rocky Bay – Head	NS	NS	NS	NS	0	0	50	300	700	NS	NS	1,500	0	NS	NS	2,550	1,930	
759	Rocky Creek	NS	NS	NS	NS	0	0	100	600	900	NS	NS	1,300		NS	NS	2,900	2,100	
766	Carr Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	20	NS	NS	NS	20	20	
770	Udall Creek	NS	NS	NS	NS	0	300	2,600	4,100	1,000	NS	NS	250	NS	NS	NS	8,250	4,100	
771	McKernan Creek	NS	NS	NS	NS	0	0	100	600	400	NS	NS	200	NS	NS	NS	1,300	820	
774	Rosswog Creek	NS	NS	NS	NS	0	70	700	1,500	1,300	NS	NS	600	NS	NS	NS	4,170	2,470	
775	Pautze Creek	NS	NS	NS	NS	0	0	900	2,100	300	NS	NS	900	NS	NS	NS	4,200	2,700	
788	Green Creek	NS	NS	NS	NS	0	0	100	0	0	NS	NS	300	5	NS	NS	405	340	
N. Montague 227–20		0	0	0	0	1,150	8,020	44,350	72,440	37,440	1,600	0	32,570	750	0	0	198,320	113,340	
Montague District TOTAL		0	0	0	0	1,350	11,470	70,750	92,720	64,870	1,600	0	47,030	750	0	0	290,540	181,760	

-Continued-



## Appendix F.5. (Pg 6 of 6)

District	Stream		Week Ending Date															Total	Adjusted Total
	Number	Name	6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23	9/30		
Southeastern	863	Orca Creek	NS	NS	0	0	300	700	NS	500	300	NS	NS	NS	NS	NS	NS	1,800	1,140
		S. Hawkins 228-10	0	0	0	0	300	700	0	500	300	0	0	0	0	0	0	1,800	1,140
	833	Bates Creek	NS	NS	0	0	100	0	NS	60	160	NS	NS	NS	NS	NS	NS	320	200
	834	Hardy Creek	NS	NS	0	1,200	5,700	15,000	NS	38,000	17,700	NS	NS	NS	NS	NS	NS	77,600	42,360
	835	Scott Creek	NS	NS	0	0	2,100	6,900	NS	17,600	12,700	NS	NS	NS	NS	NS	NS	39,300	21,880
	836	Dan's Creek	NS	NS	0	0	100	1,600	NS	6,300	3,700	NS	NS	NS	NS	NS	NS	11,700	6,320
	837	Widgeon Creek	NS	NS	0	0	0	400	NS	700	1,300	NS	NS	NS	NS	NS	NS	2,400	1,540
	839	Goose Creek	NS	NS	0	0	300	900	NS	4,000	1,900	NS	NS	NS	NS	NS	NS	7,100	4,000
		Cutoff 228-20	0	0	0	1,200	8,300	24,800	0	66,660	37,460	0	0	0	0	0	0	138,420	76,300
	844	Makaka Creek	NS	NS	0	0	500	600	NS	5,900	5,200	NS	NS	NS	NS	NS	NS	12,200	6,480
	847	Hawkins Creek	NS	NS	0	0	0	3,500	NS	11,700	6,400	NS	NS	NS	NS	NS	NS	21,600	14,830
	849	Rollins Creek	NS	NS	0	0	0	1,500	NS	2,500	2,500	NS	NS	NS	NS	NS	NS	6,500	4,750
	850	Canoe Creek	NS	NS	0	0	0	1,500	NS	4,000	4,200	NS	NS	NS	NS	NS	NS	9,700	6,330
	851	Zillisenoff Creek	NS	NS	0	0	100	100	NS	8,000	2,400	NS	NS	NS	NS	NS	NS	10,600	8,000
	856	W. Lagoon Creek	NS	NS	0	75	0	1,100	NS	1,100	1,800	NS	NS	NS	NS	NS	NS	4,075	2,110
	857	E. Lagoon Creek	NS	NS	0	0	1,200	2,000	NS	0	300	NS	NS	NS	NS	NS	NS	3,500	2,520
	858	N. Lagoon Creek	NS	NS	0	0	0	0	NS	100	0	NS	NS	NS	NS	NS	NS	100	100
	861	Bernard Creek	NS	NS	0	0	0	2,700	NS	9,000	6,600	NS	NS	NS	NS	NS	NS	18,300	12,090
	862	Clamdiggers Creek	NS	NS	0	0	0	400	NS	700	100	NS	NS	NS	NS	NS	NS	1,200	1,060
		N. Hawkins 228-30	0	0	0	75	1,800	13,400	0	43,000	29,500	0	0	0	0	0	0	87,775	58,270
	827	Captain Creek	NS	NS	0	0	0	300	NS	4,800	2,800	NS	NS	NS	NS	NS	NS	7,900	4,800
	828	Cook Creek	NS	NS	0	0	200	6,800	NS	22,400	16,000	NS	NS	NS	NS	NS	NS	15,400	24,120
	829	King Creek	NS	NS	0	0	0	0	NS	500	800	NS	NS	NS	NS	NS	NS	1,300	820
	831	Double Creek	NS	NS	0	0	0	4,100	NS	16,100	7,300	NS	NS	NS	NS	NS	NS	27,500	18,730
		Double Bay 228-40	0	0	0	0	200	11,200	0	43,800	26,900	0	0	0	0	0	0	32,100	48,470
	817	Deer Creek	NS	NS	0	200	300	4,700	NS	9,500	4,400	NS	NS	NS	NS	NS	NS	19,100	10,600
	818	Juania Creek	NS	NS	0	100	100	3,000	NS	11,000	6,800	NS	NS	NS	NS	NS	NS	21,000	11,260
	821	Brown Bear Creek	NS	NS	10	100	2,200	7,200	NS	10,000	5,200	NS	NS	NS	NS	NS	NS	24,710	13,330
		Johnstone 228-50	0	0	10	400	2,600	14,900	0	30,500	16,400	0	0	0	0	0	0	54,810	35,190
	805	Port Etches - South Shore	NS	NS	0	0	0	500	NS	70	350	NS	NS	NS	NS	NS	NS	920	930
	806	Dog Salmon Creek	NS	NS	0	0	0	250	NS	2,600	3,200	NS	NS	NS	NS	NS	NS	6,050	3,210
	807	Beaver Creek	NS	NS	0	0	0	200	NS	700	700	NS	NS	NS	NS	NS	NS	1,600	1,000
	810	Garden Creek	NS	NS	0	0	250	3,230	NS	4,500	4,400	NS	NS	NS	NS	NS	NS	12,380	6,650
	811	Etches Creek	NS	NS	0	0	0	50	NS	700	900	NS	NS	NS	NS	NS	NS	1,650	900
	812	Nuchek Creek	NS	NS	0	0	7,600	15,000	NS	36,000	27,200	NS	NS	NS	NS	NS	NS	35,800	49,080
	815	Constantine Creek	NS	NS	100	300	2,000	10,000	NS	30,000	22,100	NS	NS	NS	NS	NS	NS	54,500	33,860
		Etches 228-60	0	0	100	300	9,850	29,230	0	74,570	58,850	0	0	0	0	0	0	172,900	95,630
Southeastern District TOTAL			0	0	110	1,975	23,050	94,230	0	259,030	169,410	0	0	0	0	0	0	547,805	315,000
TOTAL OF 8 DISTRICTS			0	40	2,882	8,417	53,920	190,265	293,858	808,747	583,730	178,950	0	121,280	50,706	0	0	2,292,795	1,272,770

NS = No Survey.

Appendix F.6. Weekly aerial estimates of the escapement of live chum salmon to selected streams in Prince William Sound, 1989.

District	Stream		Week Ending Date														Total	Adjusted Total		
	Number	Name	6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23	9/30			
Eastern	2	Hartney Creek	NS	NS	NS	120	350	0	1,100	800	200	NS	NS	NS	NS	NS	NS	2,570	1,100	
	5	Eccles Creek	NS	NS	NS	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	0	0	
	8	Fleming Creek	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	
	11	Humpy Creek	0	0	0	20	0	0	0	0	0	0	NS	NS	0	NS	NS	20	20	
	Orca Inlet	221-10	0	0	0	140	350	0	1,100	800	200	0	0	0	0	0	0	2,590	1,120	
	20	Spring Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	21	Rogue Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	23	Chase Creek	0	50	500	1,400	3,700	1,800	1,700	4,600	2,500	1,400	NS	NS	0	NS	NS	17,650	7,090	
	35	Koppen Creek	0	10	2,000	3,800	5,500	2,700	1,500	1,000	0	0	NS	NS	50	NS	NS	16,560	6,650	
	36	Sheep River	0	0	150	600	2,500	1,800	5,000	2,000	0	0	NS	NS	100	NS	NS	12,150	5,000	peak
	37	Allen Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	Simpson/Sheep	221-20	0	60	2,650	5,800	11,700	6,300	8,200	7,600	2,500	1,400	0	0	150	0	0	46,360	18,740	
	41	Pass Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	46	Comfort Creek	0	0	0	10	0	350	2,000	0	0	0	NS	NS	0	NS	NS	2,360	2,000	peak
	48	Beatrap River	300	1,300	9,000	11,000	16,000	8,000	9,000	2,000	0	1,000	NS	NS	0	NS	NS	57,600	23,220	
	49	Cataract Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	51	Olsen Creek	250	800	7,000	5,100	7,600	3,400	1,000	0	0	0	NS	NS	0	NS	NS	25,150	10,210	
	52	Control Creek	0	200	300	800	400	200	0	20	0	0	NS	NS	0	NS	NS	1,920	890	
	54	Carlsen Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	56	St. Matthews Creek	0	0	0	0	0	100	0	0	0	0	NS	NS	0	NS	NS	100	100	
	Gravina	221-30	550	2,300	16,300	16,910	24,000	12,050	12,000	2,020	0	1,000	0	0	0	0	0	87,130	36,420	
	76	Irish Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	80	Whalen Creek	0	0	150	800	600	900	0	0	0	0	NS	NS	0	NS	NS	2,450	1,070	
	83	Keta Creek	0	0	0	0	0	50	0	100	1,100	1,500	NS	NS	400	NS	NS	3,150	2,050	
	87	Sunny River	0	0	0	0	200	200	0	700	1,500	9,600	NS	NS	600	NS	NS	12,800	9,600	peak
	88	Short Creek	0	0	0	0	0	50	0	21	0	200	NS	NS	0	NS	NS	271	200	peak
	89	Fish Creek	0	10	450	1,800	3,200	9,000	500	500	500	0	NS	NS	0	NS	NS	15,960	9,000	peak
	92	Shale Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	93	Kirkwood Creek	0	0	0	400	200	200	0	0	0	10	NS	NS	0	NS	NS	810	560	
	94	Rock Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	99	Lagoon Creek	0	0	100	100	300	800	0	200	200	400	NS	NS	200	NS	NS	2,300	1,220	
	Fidalgo	221-40	0	10	700	3,100	4,500	11,200	500	1,521	3,300	11,710	0	0	1,200	0	0	37,741	23,700	
	114	Turner Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	115	Millard Creek	0	0	0	90	300	100	0	0	0	0	NS	NS	0	NS	NS	490	300	peak
	116	Duck River	0	0	30	300	1,400	1,300	1,000	1,000	3,000	1,100	NS	NS	0	NS	NS	9,130	3,670	
	117	Indian Creek	0	300	4,500	3,500	3,700	4,300	4,000	500	0	0	NS	NS	0	NS	NS	20,800	8,500	
	120	Donakson Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	121	Levshakoff Creek	0	0	100	0	300	150	0	50	0	0	NS	NS	0	NS	NS	600	300	
	122	No Name Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0	
	123	Gregorieff Creek	0	80	500	200	300	400	0	0	0	0	NS	NS	0	NS	NS	1,480	640	
	127	Naomoff River	0	0	0	500	600	900	0	0	1,100	0	NS	NS	0	NS	NS	3,100	1,540	
	129	Vlasoff Creek	0	0	0	200	NS	500	200	0	400	0	NS	NS	300	NS	NS	1,600	1,080	
	152	Twin Falls Creek	0	0	0	150	900	450	0	0	0	0	NS	NS	150	NS	NS	1,650	900	peak
	153	Stellar Creek	150	100	4,500	2,700	2,300	2,000	400	500	0	0	NS	NS	0	NS	NS	12,650	5,150	
	Valdez Arm	221-50	150	480	9,630	7,640	9,800	10,100	5,600	2,050	4,500	1,100	0	0	450	0	0	51,500	22,080	
	131	Gorge Creek - Port Valdez	0	30	500	250	900	250	0	0	0	0	NS	NS	0	NS	NS	1,930	900	peak
	133	Sawmill Creek	0	50	600	1,300	700	700	0	0	0	0	NS	NS	0	NS	NS	3,350	1,370	
	137	Lowe River	NS	NS	NS	NS	NS	NS	0	NS	NS	NS	NS	NS	NS	NS	NS	0	0	
	143	Siwash Creek	0	0	0	0	20	50	0	0	0	90	NS	NS	30	NS	NS	190	140	
	145	Crooked Creek	0	0	0	10	20	250	0	0	1,000	1,500	NS	NS	1,000	NS	NS	3,780	2,520	
	148	Mineral Flats	0	0	0	0	100	700	0	0	2,000	1,990	NS	NS	2,900	NS	NS	7,690	5,090	
	Port Valdez	221-60	0	80	1,100	1,560	1,740	1,950	0	0	3,000	3,580	0	0	3,930	0	0	16,940	10,020	
Eastern District TOTAL			700	2,930	30,380	35,150	52,090	41,600	27,400	13,991	13,500	18,790	0	0	5,730	0	0	242,261	112,080	

-Continued-

Appendix F.6. (Pg 2 of 6).

District	Stream		Week Ending Date														Adjusted		
	Number	Name	6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23	9/30	Total	Total
Northern	208	Granite Cove	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0
	213	Bench Mark Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0
	214	Long Creek	0	0	3,500	5,000	8,100	8,500	1,000	0	100	0	NS	NS	0	NS	NS	26,200	12,580
	216	Vanishing Creek	0	0	50	600	400	600	0	0	0	0	NS	NS	0	NS	NS	1,650	690
	217	Spring Creek	0	0	400	0	100	150	0	0	0	0	NS	NS	0	NS	NS	650	500
	218	Billy's Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0
	221	Eickelberg Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0
	Columbia/Long 222-10		0	0	3,950	5,600	8,600	9,250	1,000	0	100	0	0	0	0	0	0	28,500	13,770
	224	Backyard Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	NS	0	0
	227	Granite Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0	0
	229	Cedar Creek	0	0	0	0	0	500	0	0	0	0	NS	NS	NS	NS	NS	500	500
	232	Delta Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0	0
	233	Surplus Creek	0	0	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0	0
	234	Wells River	100	600	7,500	15,000	9,000	8,000	5,000	4,000	0	0	NS	NS	NS	NS	NS	49,200	19,740
	257	Complex Creek	NS	0	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0	0
	258	Williams Creek	NS	0	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0	0
	259	Jonah Creek	NS	0	0	30	50	500	1,500	500	800	0	NS	NS	NS	NS	NS	3,380	1,500
	263	Waterfall Creek	NS	0	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0	0
	264	Siwash River	NS	0	0	20	200	250	0	710	300	0	NS	NS	NS	NS	NS	1,480	710
	265	Unakwik Creek	NS	0	0	0	0	0	0	0	10	0	NS	NS	NS	NS	NS	10	10
	Wells/Unakwik 222-20		100	600	7,500	15,050	9,250	9,250	6,500	5,210	1,110	0	0	0	0	0	0	54,570	22,460
	273	Schope Creek	NS	0	0	0	0	0	300	100	0	0	NS	NS	NS	NS	NS	400	340
	276	Black Bear Creek	NS	0	0	0	20	50	0	600	400	300	NS	NS	NS	NS	NS	1,370	600
	277	Dead Creek	NS	0	0	0	0	0	0	0	10	0	NS	NS	NS	NS	NS	10	10
	278	Comeback Creek	NS	0	0	0	0	0	0	0	0	0	NS	NS	NS	NS	NS	0	0
279	Canyon Creek	NS	0	150	50	0	50	1,700	1,000	600	0	NS	NS	NS	NS	NS	3,550	1,700	
282	Good Creek	NS	0	0	0	50	400	2,000	3,000	1,100	1,100	NS	NS	NS	NS	NS	7,650	3,090	
283	Bad Creek	NS	0	0	0	10	100	4,500	1,000	900	900	NS	NS	NS	NS	NS	7,410	4,500	
Eaglek 222-30		0	0	150	50	80	600	8,500	5,700	3,010	2,300	0	0	0	0	0	20,390	10,240	
242	Cowpen Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0	
Unakwik District 222-50		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Northern District TOTAL			100	600	11,600	20,700	17,930	19,100	16,000	10,910	4,220	2,300	0	0	0	0	0	103,460	46,470

-Continued-

Appendix F.6. (Pg 3 of 6).

District	Stream		Week Ending Date														Total	Adjusted Total		
	Number	Name	6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23			9/30	
Coghill	414	Harrison Creek	NS	0	0	0	0	0	NS	10	0	NS	NS	NS	NS	NS	NS	10	10	peak
	417	Hobo Creek	NS	0	0	0	0	0	NS	0	10	NS	NS	NS	NS	NS	NS	10	10	
	421	Mill Creek	NS	0	0	NS	300	750	NS	8,500	4,000	NS	NS	NS	NS	NS	NS	13,550	8,500	
	424	Old Creek	NS	0	0	0	0	0	NS	500	100	NS	NS	NS	NS	NS	NS	600	540	
	425	Hummer Creek	NS	0	0	0	20	200	NS	1,000	50	NS	NS	NS	NS	NS	NS	1,270	1,000	
	428	Pirate Creek	NS	0	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0	
	430	Meacham Creek	NS	2	0	150	0	100	NS	1,000	0	NS	NS	NS	NS	NS	NS	1,252	1,000	
	432	Swanson Creek	NS	1	0	90	500	700	NS	5,500	700	NS	NS	NS	NS	NS	NS	7,491	5,500	
	W. Port Wells 223-10		0	3	0	240	820	1,750	0	16,510	4,860	0	0	0	0	0	0	24,183	16,560	
	303	Triple Creek	NS	0	0	0	0	0	NS	0	0	0	NS	NS	NS	NS	NS	0	0	
	307	Village Creek	NS	0	0	0	0	0	NS	0	0	0	NS	NS	NS	NS	NS	0	0	
	Esther Passage 223-20		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	310	Golden Lagoon	NS	0	0	0	0	0	NS	0	0	0	NS	NS	NS	NS	NS	0	0	
314	Avery River	NS	0	0	0	0	0	NS	0	0	0	NS	NS	NS	NS	NS	0	0		
322	Coghill River - Below Weir	NS	0	0	300	1,800	1,500	NS	5,000	3,000	NS	NS	NS	NS	NS	NS	11,600	6,120		
3221	Coghill River - Lake Count	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	0		
E. Port Wells 223-30		0	0	0	300	1,800	1,500	0	5,000	3,000	0	0	0	0	0	0	11,600	6,120		
Coghill District TOTAL			0	3	0	540	2,620	3,250	0	21,510	7,860	0	0	0	0	0	0	35,783	22,680	
Northwestern	435	Logging Camp Creek	NS	0	0	20	0	0	NS	300	0	NS	NS	NS	NS	NS	NS	320	300	peak
	450	Tebenkoff Creek	NS	0	0	300	1,000	1,200	NS	1,200	0	NS	NS	NS	NS	NS	NS	3,700	2,140	
	451	Blackstone Creek	NS	0	0	40	20	100	NS	900	0	NS	NS	NS	NS	NS	NS	1,060	900	
	454	Halferty Creek	NS	0	350	500	2,500	2,800	NS	3,300	1,000	NS	NS	NS	NS	NS	NS	10,450	5,610	
	455	Paulson Creek	NS	0	200	3,200	1,800	1,200	NS	500	0	NS	NS	NS	NS	NS	NS	6,900	3,220	
	458	Parks Creek	NS	0	0	0	300	0	NS	100	0	NS	NS	NS	NS	NS	NS	400	680	
	461	Cochrane Creek	NS	0	0	0	0	100	NS	0	0	NS	NS	NS	NS	NS	NS	100	100	
	469	Wickett Creek	NS	0	0	50	10	100	NS	200	0	NS	NS	NS	NS	NS	NS	360	230	
	Passage/Cochrane 224-10		0	0	550	4,110	5,630	5,500	0	6,500	1,000	0	0	0	0	0	0	23,290	13,180	
	471	Narrows Creek	NS	0	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0	
	476	Shrode Creek	NS	0	0	10	1,300	800	NS	0	0	NS	NS	NS	NS	NS	NS	2,110	1,300	
	479	Culross Creek	NS	0	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0	
	Culross Pass 224-30		0	0	0	10	1,300	800	0	0	0	0	0	0	0	0	0	2,110	1,300	
	480	Mink Creek	NS	0	100	2,500	1,800	1,500	NS	100	0	NS	NS	NS	0	NS	NS	6,000	2,780	
	484	E. Finger Creek	NS	0	0	392	300	600	NS	0	0	NS	NS	NS	0	NS	NS	1,292	750	
	485	W. Finger Creek	NS	0	0	1,700	1,800	3,000	NS	1,000	1,000	NS	NS	NS	0	NS	NS	8,500	5,220	
	493	Most Creek	NS	0	0	0	0	0	NS	500	0	NS	NS	NS	0	NS	NS	500	500	
495	Chimevisky Lagoon	NS	0	0	1,000	700	200	NS	3,700	0	NS	NS	NS	0	NS	NS	5,600	3,700		
498	McClure Creek	NS	0	0	0	0	0	NS	0	0	NS	NS	NS	0	NS	NS	0	0		
Nellie Juan 224-40		0	0	100	5,592	4,600	5,300	0	5,300	1,000	0	0	0	0	0	0	21,892	12,950		
Northwestern District TOTAL			0	0	650	9,712	11,530	11,600	0	11,800	2,000	0	0	0	0	0	0	47,292	27,430	

-Continued-

Appendix F.6. (Pg 4 of 6).

District	Stream		Week Ending Date															Total	Adjusted Total
	Number	Name	6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23	9/30		
Eshamy	506	Loomis Creek	NS	NS	NS	0	0	0	0	0	0	0	NS	0	0	NS	NS	0	0
	508	North Shore - Eshamy Lgn	NS	NS	NS	NS	0	0	50	0	0	0	NS	0	0	NS	NS	50	50
	510	Elishansky Creek	NS	NS	NS	NS	0	250	50	0	0	0	NS	0	0	NS	NS	300	270
Eshamy District TOTAL			0	0	0	0	0	250	100	0	0	0	0	0	0	0	0	350	320
Southwestern	601	Paddy Creek	NS	NS	0	0	0	0	0	0	0	0	NS	0	0	NS	NS	0	0
	603	Ewan Creek	NS	NS	0	0	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	604	Erb Creek	NS	NS	0	NS	50	0	100	1,000	100	NS	NS	0	0	NS	NS	1,250	1,000
	608	Jackpot River	NS	NS	0	NS	0	0	0	0	0	NS	NS	200	0	NS	NS	200	200
	610	Kompkoff River	NS	NS	0	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	611	Jackpot Bay - West Arm	NS	NS	0	NS	0	50	0	0	0	NS	NS	0	0	NS	NS	50	50
	612	Jackpot Bay - West Arm	NS	NS	0	NS	100	400	100	0	0	NS	NS	0	0	NS	NS	600	400
	613	Jackson Creek	NS	NS	600	2,000	7,000	6,000	4,000	2,000	0	NS	NS	0	0	NS	NS	21,600	9,000
	621	Totemoff Creek	NS	NS	0	NS	0	0	0	10	0	NS	NS	0	0	NS	NS	10	10
	623	Brizgaloff Creek	NS	NS	0	0	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	630	Bainbridge Creek	NS	NS	0	NS	0	0	500	0	0	NS	NS	0	0	NS	NS	500	500
	632	Claw Creek	NS	NS	0	NS	0	0	100	0	0	NS	NS	0	0	NS	NS	100	100
	633	Pablo Creek	NS	NS	0	NS	0	100	27	0	0	NS	NS	0	0	NS	NS	127	110
	634	Whale Bay-B. Head-S. Arm	NS	NS	0	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	636	Whale Creek	NS	NS	0	NS	0	28	50	0	0	NS	NS	0	0	NS	NS	78	50
	Chenega 226-20		0	0	600	2,000	7,150	6,578	4,877	3,010	100	0	0	200	0	0	0	24,515	11,420
	655	Johnson Creek	NS	NS	0	0	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	656	Halverson Creek	NS	NS	0	0	200	150	0	0	0	NS	NS	0	0	NS	NS	350	260
	666	O'Brien Creek	NS	NS	0	NS	0	0	0	0	0	NS	NS	0	10	NS	NS	10	10
	670	Montgomery Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	676	Horseshoe Creek	NS	NS	0	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	Bainbridge/Latouche 226-40		0	0	0	0	200	150	0	0	0	0	0	0	10	0	0	360	270
	Southwestern District TOTAL			0	0	600	2,000	7,350	6,728	4,877	3,010	100	0	0	200	10	0	0	24,875

--Continued--

Appendix F.6. (Pg 5 of 6).

District	Stream		Week Ending Date															Adjusted Total	
	Number	Name	6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23	9/30		Total
Montague	702	Point Creek	NS	NS	NS	NS	0	0	0		0	NS	NS	0	NS	NS	NS	0	0
	707	MacLeod Creek	NS	NS	NS	NS	0	0	0		0	NS	NS	0	NS	NS	NS	0	0
	710	Hanning Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	NS	NS	NS	0	0
	711	Quadra Creek	NS	NS	NS	NS	0	0	0		0	NS	NS	0	NS	NS	NS	0	0
	717	Montague I. – West Shore	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	NS	NS	NS	0	0
	726	Montague Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS		NS	NS	NS	0	0
	S. Montague 227–10		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	738	Russell Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	739	Swamp Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	740	Kelez Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	741	Chalmers River	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	744	Wilby Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	745	Wild Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	746	Schuman Creek	NS	NS	NS	NS	0	0	0		NS	NS	NS	0	0	NS	NS	0	0
	747	Cabin Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	748	Gilmour Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	749	Shad Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	0	NS	NS	0	0
	752	Stockdale Creek	NS	NS	NS	NS	0	0	0	0	0	0	NS	0	0	NS	NS	0	0
	770	Udall Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	NS	NS	NS	0	0
	774	Rosswog Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	NS	NS	NS	0	0
	775	Pautze Creek	NS	NS	NS	NS	0	0	0	0	0	NS	NS	0	NS	NS	NS	0	0
N. Montague 227–20		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Montague District TOTAL			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

-Continued-

Appendix F.6. (Pg 6 of 6).

District	Stream Number Name	Week Ending Date															Total	Adjusted Total
		6/24	7/01	7/08	7/15	7/22	7/29	8/05	8/12	8/19	8/26	9/02	9/09	9/16	9/23	9/30		
Southeastern	833 Bates Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	834 Hardy Creek	NS	NS	0	0	300	0	NS	0	0	NS	NS	NS	NS	NS	NS	300	300
	835 Scott Creek	NS	NS	0	7	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	7	10
	836 Dan's Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	837 Widgeon Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	839 Goose Creek	NS	NS	0	0	100	0	NS	0	0	NS	NS	NS	NS	NS	NS	100	100
	Cutoff 228-20	0	0	0	7	400	0	0	0	0	0	0	0	0	0	0	407	410
	844 Makaka Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	847 Hawkins Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	849 Rollins Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	850 Canoe Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	851 Zillesenoff Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	861 Bernard Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	N. Hawkins 228-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	827 Captain Creek	NS	NS	0	0	2,000	0	NS	0	300	NS	NS	NS	NS	NS	NS	2,300	2,120
	828 Cook Creek	NS	NS	0	3,500	1,900	700	NS	0	2,000	NS	NS	NS	NS	NS	NS	8,100	5,480
	829 King Creek	NS	NS	0	0	100	0	NS	0	400	NS	NS	NS	NS	NS	NS	500	400 peak
	831 Double Creek	NS	NS	0	0	1,000	200	NS	0	1,400	NS	NS	NS	NS	NS	NS	2,600	1,680
	Double Bay 228-40	0	0	0	3,500	5,000	900	0	0	4,100	0	0	0	0	0	0	13,500	9,680
	817 Deer Creek	NS	NS	0	100	50	200	NS	0	0	NS	NS	NS	NS	NS	NS	350	200
	818 Juania Creek	NS	NS	0	50	100	0	NS	0	0	NS	NS	NS	NS	NS	NS	150	100 peak
	821 Brown Bear Creek	NS	NS	60	700	2,100	1,000	NS	300	0	NS	NS	NS	NS	NS	NS	4,160	2,100 peak
	Johnstone 228-50	0	0	60	850	2,250	1,200	0	300	0	0	0	0	0	0	0	4,660	2,400
	806 Dog Salmon Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	807 Beaver Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	810 Garden Creek	NS	NS	0	10	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	10	10
	811 Etches Creek	NS	NS	0	0	0	0	NS	0	0	NS	NS	NS	NS	NS	NS	0	0
	812 Nuchek Creek	NS	NS	0	0	1,200	0	NS	0	0	NS	NS	NS	NS	NS	NS	1,200	1,200
	815 Constantine Creek	NS	NS	300	3,100	8,000	6,000	NS	1,000	0	NS	NS	NS	NS	NS	NS	18,400	8,940
	Etches 228-60	0	0	300	3,110	9,200	6,000	0	1,000	0	0	0	0	0	0	0	19,610	10,150
Southeastern District TOTAL		0	0	360	7,467	16,850	8,100	0	1,300	4,100	0	0	0	0	0	0	38,177	22,640
TOTAL OF 8 DISTRICTS		800	3,533	43,590	75,569	108,370	90,628	48,377	62,521	31,780	21,090	0	200	5,740	0	0	492,198	243,310

NS = No Survey.

Appendix F.7. Temporally stratified age and sex composition of the sockeye salmon escapement through the weir on the outlet stream of Coghill Lake, 1989.

		Brood Year and Age Group									
		1986	1985		1984		1983		1982		
		1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3	2.4	Total
Stratum Dates: 6/10-7/02											
Sampling Dates: 6/22-6/29											
Sample Size: 593											
Female	Percent of Sample	0.0	0.0	0.5	0.0	36.4	0.7	0.0	6.1	0.2	43.8
	Number in Catch	0	0	23	0	1,642	30	0	274	8	1,976
Male	Percent of Sample	0.0	0.0	6.1	0.2	34.7	8.1	0.0	6.9	0.2	56.2
	Number in Catch	0	0	274	8	1,566	365	0	312	8	2,531
Total	Percent of Sample	0.0	0.0	6.6	0.2	71.2	8.8	0.0	13.0	0.3	100.0
	Number in Catch	0	0	296	8	3,207	395	0	585	15	4,507
	Standard Error	0	0	46	8	84	52	0	62	11	
Stratum Dates: 7/03-7/12											
Sampling Dates: 7/06-7/07											
Sample Size: 604											
Female	Percent of Sample	0.2	0.0	0.3	0.2	49.8	0.8	0.2	5.8	0.0	57.3
	Number in Catch	29	0	57	29	8,585	143	29	998	0	9,868
Male	Percent of Sample	0.0	0.2	0.8	0.5	35.1	1.3	0.0	4.6	0.2	42.7
	Number in Catch	0	29	143	86	6,047	228	0	799	29	7,359
Total	Percent of Sample	0.2	0.2	1.2	0.7	84.9	2.2	0.2	10.4	0.2	100.0
	Number in Catch	29	29	200	114	14,632	371	29	1,797	29	17,227
	Standard Error	29	29	75	57	251	102	29	214	29	
Stratum Dates: 7/13-7/27											
Sampling Dates: 7/18											
Sample Size: 611											
Female	Percent of Sample	0.0	0.0	1.0	0.0	57.1	2.5	0.5	5.4	0.7	67.1
	Number in Catch	0	0	157	0	9,149	393	79	865	105	10,748
Male	Percent of Sample	0.0	0.0	0.8	0.3	25.7	1.5	0.5	3.4	0.7	32.9
	Number in Catch	0	0	131	52	4,116	236	79	551	105	5,269
Total	Percent of Sample	0.0	0.0	1.8	0.3	82.8	3.9	1.0	8.8	1.3	100.0
	Number in Catch	0	0	288	52	13,264	629	157	1,416	210	16,017
	Standard Error	0	0	86	37	245	126	64	184	74	
Strata Combined: 6/10-7/27											
Sampling Dates: 6/22-7/18											
Sample Size: 1,808											
Female	Percent of Sample	0.1	0.0	0.6	0.1	51.3	1.5	0.3	5.7	0.3	59.8
	Number in Catch	29	0	237	29	19,375	566	107	2,137	112	22,592
Male	Percent of Sample	0.0	0.1	1.4	0.4	31.1	2.2	0.2	4.4	0.4	40.2
	Number in Catch	0	29	547	146	11,728	829	79	1,661	141	15,159
Total	Percent of Sample	0.1	0.1	2.1	0.5	82.4	3.7	0.5	10.1	0.7	100.0
	Number in Catch	29	29	784	174	31,103	1,395	186	3,798	253	37,751
	Standard Error	29	29	123	68	360	170	70	289	80	



Appendix F.8. Temporally stratified age and sex composition of the sockeye salmon escapement through the weir at the head of Eshamy Lagoon, 1989.

		Brood Year and Age Group					Total
		1986	1985	1984		1983	
		1.1	1.2	1.3	2.2	2.3	
Stratum Dates: 6/18-7/31 <sup>a</sup>							
Sampling Dates: 7/13-7/21							
Sample Size: 533							
Female	Percent of Sample	0.0	40.3	8.1	8.8	1.3	58.5
	Number in Catch	0	9,981	1,996	2,182	325	14,484
Male	Percent of Sample	0.0	29.3	4.7	6.8	0.8	41.5
	Number in Catch	0	7,242	1,161	1,671	186	10,260
Total	Percent of Sample	0.0	69.6	12.8	15.6	2.1	100.0
	Number in Catch	0	17,223	3,157	3,853	511	24,744
	Standard Error	0	493	358	389	153	
Stratum Dates: 8/01-8/21							
Sampling Dates: 8/10-8/13							
Sample Size: 571							
Female	Percent of Sample	0.0	43.3	0.2	8.1	0.0	51.5
	Number in Catch	0	9,606	39	1,789	0	11,434
Male	Percent of Sample	0.0	38.7	1.6	8.1	0.2	48.5
	Number in Catch	0	8,595	350	1,789	39	10,772
Total	Percent of Sample	0.0	82.0	1.8	16.1	0.2	100.0
	Number in Catch	0	18,200	389	3,578	39	22,206
	Standard Error	0	358	122	342	39	
Stratum Dates: 8/22-9/08							
Sampling Dates: 8/27-8/29							
Sample Size: 602							
Female	Percent of Sample	2.5	55.0	1.0	0.2	0.0	58.6
	Number in Catch	278	6,145	111	19	0	6,554
Male	Percent of Sample	2.7	37.9	0.8	0.0	0.0	41.4
	Number in Catch	297	4,233	93	0	0	4,623
Total	Percent of Sample	5.1	92.9	1.8	0.2	0.0	100.0
	Number in Catch	576	10,379	204	19	0	11,177
	Standard Error	101	117	61	19	0	
Strata Combined: 6/18-9/08							
Sampling Dates: 7/13-8/29							
Sample Size: 1,706							
Female	Percent of Sample	0.5	44.3	3.7	6.9	0.6	55.9
	Number in Catch	278	25,732	2,147	3,989	325	32,472
Male	Percent of Sample	0.5	34.5	2.8	6.0	0.4	44.1
	Number in Catch	297	20,070	1,603	3,460	225	25,655
Total	Percent of Sample	1.0	78.8	6.5	12.8	0.9	100.0
	Number in Catch	576	45,802	3,750	7,450	550	58,127
	Standard Error	101	621	383	518	157	

<sup>a</sup> From 6/18-7/05 counts were obtained from a smolt weir operated by FRED Division.

Appendix F.9. Estimated age and sex composition of the sockeye salmon escapement through the Jackpot Weir, 1989.

		Brood Year and Age Group								
		1986	1985		1984			1983		
		0.2	0.3	1.2	0.4	1.3	2.2	1.4	2.3	Total
Stratum Dates:		07/01 - 08/14								
Sampling Dates:		07/17 - 08/14								
Sample Size:		363								
Female	Percent of Sample	0.0	0.6	0.6	0.0	26.4	1.4	0.3	3.0	32.2
	Number in Escapement	0	16	16	0	789	41	8	90	961
Male	Percent of Sample	0.3	0.3	4.7	0.3	55.9	2.2	0.0	3.9	67.5
	Number in Escapement	8	8	140	8	1,668	66	0	115	2,013
Total	Percent of Sample	0.3	0.8	5.2	0.3	82.6	3.6	0.3	6.9	100.0
	Number in Escapement	8	25	156	8	2,465	107	8	205	2,983
	Standard Error	8	14	35	8	59	29	8	40	

Appendix F.10. Daily brood stock counts of chum salmon at Wally H. Noerenberg Hatchery, 1989.

Date	Daily	Cumulative
15-Jun	0	0
16-Jun	0	0
17-Jun	2860	2860
18-Jun	3080	5940
19-Jun	3341	9281
20-Jun	4275	13556
21-Jun	3450	17006
22-Jun	7750	24756
23-Jun	3600	28356
24-Jun	1940	30296
25-Jun	8910	39206
26-Jun	2650	41856
27-Jun	3465	45321
28-Jun	3085	48406
29-Jun	1325	49731
30-Jun	3425	53156
01-Jul	1425	54581
02-Jul	940	55521
03-Jul	1475	56996
04-Jul	600	57596
05-Jul	1351	58947
06-Jul	1192	60139
07-Jul	1780	61919
08-Jul	926	62845
09-Jul	468	63313
10-Jul	1495	64808
11-Jul	465	65273
12-Jul	153	65426
13-Jul	692	66118
14-Jul	8	66126
15-Jul	904	67030
16-Jul	4438	71468
17-Jul	2422	73890
18-Jul	1299	75189
19-Jul	1221	76410
20-Jul	585	76995
21-Jul	570	77565
22-Jul	1005	78570
23-Jul	950	79520
Totals	79520	1945972

Appendix F.11. Estimated age and sex composition of chinook salmon in the Wally H. Noerenberg Hatchery brood stock, 1989.

		Brood Year and Age Group				
		1986	1985	1984	1983	
		1.1	1.2	1.3	1.4	Total
<hr/>						
Sampling Dates:	07/25 - 08/18					
Female	Sample Size	1	0	41	2	44
	Percent of Sample	1.4	0.0	56.9	2.8	61.1
Male	Sample Size	0	1	23	4	28
	Percent of Sample	0.0	1.4	31.9	5.6	38.9
Total	Sample Size	1	1	64	6	72
	Percent of Sample	1.4	1.4	88.9	8.3	100.0
	Standard Error	1.4	1.4	3.7	3.3	

Appendix F.12. Temporally stratified age and sex composition of chum salmon in the Wally H. Noerenberg Hatchery brood stock, 1989.

		Brood Year and Age Group				
		1986	1985	1984	1983	
		0.2	0.3	0.4	0.5	Total
<hr/>						
Sampling Dates:	07/08					
Female	Sample Size	0	4	46	53	103
	Percent of Sample	0.0	2.4	27.4	31.5	61.3
Male	Sample Size	0	3	28	34	65
	Percent of Sample	0.0	1.8	16.7	20.2	38.7
Total	Sample Size	0	7	74	87	168
	Percent of Sample	0.0	4.2	44.0	51.8	100.0
	Standard Error	0.0	1.5	3.8	3.9	
<hr/>						
Sampling Dates:	07/24					
Female	Sample Size	0	49	22	1	72
	Percent of Sample	0.0	28.7	12.9	0.6	42.1
Male	Sample Size	0	53	41	5	99
	Percent of Sample	0.0	31.0	24.0	2.9	57.9
Total	Sample Size	0	102	63	6	171
	Percent of Sample	0.0	59.6	36.8	3.5	100.0
	Standard Error	0.0	3.8	3.7	1.4	
<hr/>						
Sampling Dates:	08/04					
Female	Sample Size	4	78	11	0	93
	Percent of Sample	2.4	46.7	6.6	0.0	55.7
Male	Sample Size	6	64	4	0	74
	Percent of Sample	3.6	38.3	2.4	0.0	44.3
Total	Sample Size	10	142	15	0	167
	Percent of Sample	6.0	85.0	9.0	0.0	100.0
	Standard Error	1.8	2.8	2.2	0.0	
<hr/>						
Sampling Dates:	08/09 – 08/11					
Female	Sample Size	0	76	10	0	86
	Percent of Sample	0.0	43.4	5.7	0.0	49.1
Male	Sample Size	5	65	19	0	89
	Percent of Sample	2.9	37.1	10.9	0.0	50.9
Total	Sample Size	5	141	29	0	175
	Percent of Sample	2.9	80.6	16.6	0.0	100.0
	Standard Error	1.3	3.0	2.8	0.0	

## **APPENDIX G**

Mean Lengths by Sex and Age of Salmon  
in the Commercial Catches and Escapements  
of the Copper/Bering Rivers and Prince William Sound.

Appendix G.1. Mean length by sex and age of sockeye salmon from the commercial common property drift gillnet catches in the Copper River District, 1989.

		Brood Year and Age Group									
		1986		1985		1984			1983		1982
		0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	2.4
Sample Date:		5/17									
Females	Mean Length (mm)			557	498		565		538	549	
	Std. Error			4.5	0.0		1.9		0.0	4.6	
	Sample Size			25	1		232		1	49	
Males	Mean Length (mm)			586			594		640	585	651
	Std. Error			5.0			2.0		0.0	3.9	0.0
	Sample Size			23			209		1	44	1
Sample Date:		5/24									
Females	Mean Length (mm)			552	492		562			550	
	Std. Error			5.3	17.7		1.9			6.7	
	Sample Size			22	4		199			28	
Males	Mean Length (mm)	586		593	518	634	597			587	
	Std. Error	0.0		6.0	21.2	0.0	2.2			4.8	
	Sample Size	1		16	8	1	257			27	
Sample Date:		5/31									
Females	Mean Length (mm)	413		570	498	0	573	491	600	558	
	Std. Error	11.0		5.0	8.1	0.0	1.7	8.9	0.0	4.0	
	Sample Size	2		14	5	0	227	4	1	45	
Males	Mean Length (mm)	461		596	474	582	595	496		566	559
	Std. Error	11.3		11.0	9.7	0.0	3.0	10.0		7.1	0.0
	Sample Size	8		12	22	1	177	2		32	1
Sample Date:		6/07									
Females	Mean Length (mm)	444		575	487		567	494	550	553	555
	Std. Error	8.5		15.2	5.8		1.6	10.4	10.5	4.0	0.0
	Sample Size	2		7	19		226	6	3	52	1
Males	Mean Length (mm)	503		653	470		596	455	622	581	599
	Std. Error	15.9		0.0	5.7		2.4	0.0	0.0	6.3	0.0
	Sample Size	3		1	40		199	1	1	50	1
Sample Date:		6/13									
Females	Mean Length (mm)	479		553	525		572	497	593	555	
	Std. Error	35.0		10.9	8.9		1.3	0.0	0.0	4.1	
	Sample Size	2		6	10		269	1	1	30	
Males	Mean Length (mm)	503		595	469		588	517	652	587	
	Std. Error	13.5		26.8	8.9		1.9	22.4	0.0	8.2	
	Sample Size	2		3	19		240	5	1	19	

- Continued -

Appendix G.1. (Pg 2 of 2).

		Brood Year and Age Group									
		1986		1985		1984			1983		1982
		0.2	1.1	0.3	1.2	0.4	1.3	2.2	1.4	2.3	2.4
Sample Date: 6/24											
Females	Mean Length (mm)	473		562	503		574			550	
	Std. Error	23.0		10.7	8.0		1.5			6.9	
	Sample Size	2		11	19		245			11	
Males	Mean Length (mm)	466	336	587	483		588	519	550	577	
	Std. Error	20.9	9.5	16.9	5.9		2.2	34.5	0.0	8.7	
	Sample Size	4	2	6	49		243	2	1	13	
Sample Date: 7/11											
Females	Mean Length (mm)	520		577	520		583	516		575	
	Std. Error	39.5		12.3	3.9		1.7	10.2		3.6	
	Sample Size	2		5	26		181	7		48	
Males	Mean Length (mm)	525	340	630	510		599	533		592	
	Std. Error	15.0	0.0	10.4	5.4		2.0	18.8		4.3	
	Sample Size	3	1	3	54		205	10		43	
Sample Date: 7/25											
Females	Mean Length (mm)	532		580	521		586	539		584	
	Std. Error	0.0		10.5	4.0		1.4	6.6		4.3	
	Sample Size	1		2	41		233	13		36	
Males	Mean Length (mm)		360	583	526		608	527		607	
	Std. Error		5.0	20.7	7.2		2.4	11.6		6.6	
	Sample Size		2	5	47		142	15		24	
All Samples: 5/17-7/25											
Females	Mean Length (mm)	472		561	511		573	517	564	560	555
	Std. Error	14.7		2.8	2.6		0.6	5.5	11.6	1.8	0.0
	Sample Size	11		92	125		1812	31	6	299	1
Males	Mean Length (mm)	487	346	592	495	608	595	523	616	585	603
	Std. Error	9.5	6.6	3.8	3.1	26.0	0.8	8.2	22.9	2.2	26.6
	Sample Size	21	5	69	239	2	1672	35	4	252	3



Appendix G.2. Mean length by age and sex of sockeye salmon from the commercial common property drift gillnet catches in the Bering River District, 1989.

		Brood Year and Age Group						
		1986		1985		1984		1983
		0.2	1.1	0.3	1.2	1.3	2.2	2.3
Sample Date:		6/21						
Females	Mean Length (mm)	505		585	520	574		553
	Std. Error	8.5		5.0	6.9	2.0		6.1
	Sample Size	6		2	36	178		26
Males	Mean Length (mm)	489	329	589	494	594	469	575
	Std. Error	21.5	5.9	13.0	8.5	2.6	10.3	8.5
	Sample Size	10	3	2	66	230	6	28

Appendix G.3. Mean length by sex and age of chinook salmon from the commercial common property drift gillnet catches in the Copper River District, 1989.

		Brood Year and Age Group									
		1986	1985		1984			1983		1982	
		1.1	1.2	2.1	0.4	1.3	2.2	1.4	2.3	1.5	2.4
Sample Date: 5/16											
Females	Mean Length (mm)				899	800		892	796	959	895
	Std. Error				0.0	6.6		3.6	21.5	7.0	11.0
	Sample Size				1	53		132	9	2	19
Males	Mean Length (mm)		573			817		946	820	984	927
	Std. Error		26.5			11.6		4.0	11.5	14.1	11.7
	Sample Size		4			44		184	4	18	27
Sample Date: 5/27											
Females	Mean Length (mm)		589			814		905	815	990	876
	Std. Error		21.7			4.2		3.7	21.6	10.0	12.6
	Sample Size		5			77		141	8	2	10
Males	Mean Length (mm)	471	585	430		837	650	943	819	1003	911
	Std. Error	0.0	14.2	0.0		5.7	45.0	4.3	49.9	13.3	24.0
	Sample Size	1	15	1		66	2	188	3	8	11
Sample Date: 6/10											
Females	Mean Length (mm)		656			858		925	852	940	912
	Std. Error		16.1			5.8		3.4	10.5	20.2	8.0
	Sample Size		4			62		151	7	5	19
Males	Mean Length (mm)	518	618	501		854		957	858	1011	963
	Std. Error	0.0	30.2	10.5		9.1		5.3	24.1	24.9	15.4
	Sample Size	1	6	2		66		156	5	7	15
All Samples Combined											
Females	Mean Length (mm)		619		899	824		908	819	956	898
	Std. Error		17.7		0.0	3.5		2.2	11.8	12.9	6.2
	Sample Size		9		1	192		424	24	9	48
Males	Mean Length (mm)	495	591	477		838	650	948	835	994	934
	Std. Error	23.5	11.9	24.3		5.0	45.0	2.6	15.7	9.8	9.1
	Sample Size	2	25	3		176	2	528	12	33	53

Appendix G.4. Mean length by age and sex of coho salmon from the commercial common property drift gillnet catches in the Copper River District, 1989.

		Brood Year and Age Group		
		1986	1985	1984
		—	—	—
		1.1	2.1	3.1
Sample Date:		8/09		
Females	Mean Length (mm)	573	579	603
	Std. Error	10.7	10.9	7.0
	Sample Size	30	29	2
Males	Mean Length (mm)	555	597	591
	Std. Error	5.1	4.5	33.6
	Sample Size	152	195	7
Sample Date:		8/23		
Females	Mean Length (mm)	613	619	
	Std. Error	5.9	5.6	
	Sample Size	65	71	
Males	Mean Length (mm)	590	615	
	Std. Error	5.0	5.3	
	Sample Size	148	125	

Appendix G.5. Mean length by age and sex of coho salmon from the commercial common property drift gillnet catches in the Bering River District, 1989.

		Brood Year and Age Group			
		1986	1985		1984
		1.1	2.1	2.2	3.1
Sample Date:		8/09			
Females	Mean Length (mm)	610	627		580
	Std. Error	6.0	4.9		0.0
	Sample Size	35	72		1
Males	Mean Length (mm)	609	607	611	603
	Std. Error	5.5	4.7	0.0	44.1
	Sample Size	105	134	1	3

Appendix G.6. Mean length by sex and age of sockeye salmon in personal use and subsistence, fish wheel and dip net catches from the upper Copper River near Chitina, 1989.

		Brood Year and Age Group									
		1987	1986		1985			1984		1983	
		0.1	0.2	1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3
<b>Dip Nets</b>											
Sample Dates: 6/02–7/30											
Females	Mean Length (mm)		582		558	529	386	563	472	560	546
	Std. Error		0.0		11.5	6.9	0.0	1.7	30.4	27.5	6.3
	Sample Size		1		6	104	1	438	3	2	14
Males	Mean Length (mm)			537	567	562		581	446	645	569
	Std. Error			0.0	8.5	4.2		2.0	26.0	0.0	9.7
	Sample Size			1	11	168		552	2	1	14
<b>Fish Wheels</b>											
Sample Dates: 6/04–7/26											
Females	Mean Length (mm)		533	549	511	556		568	493		539
	Std. Error		0.0	0.0	0.0	4.7		3.2	24.7		12.7
	Sample Size		1	1	1	53		89	5		13
Males	Mean Length (mm)	432	501	534	0	560		588	563		580
	Std. Error	0.0	0.0	25.3	0.0	6.1		5.3	21.6		8.3
	Sample Size	1	1	8	0	69		110	5		10
<b>All Samples Combined</b>											
Sample Dates: 6/02–7/30											
Females	Mean Length (mm)		558	549	551	538	386	564	485	560	543
	Std. Error		24.5	0.0	11.8	4.9	0.0	1.5	18.2	27.5	6.9
	Sample Size		2	1	7	157	1	527	8	2	27
Males	Mean Length (mm)	432	501	534	567	561		582	530	645	574
	Std. Error	0.0	0.0	22.3	8.5	3.5		1.9	26.9	0.0	6.6
	Sample Size	1	1	9	11	237		662	7	1	24

Appendix G.7. Mean length by sex and age of chinook salmon from sport fishery catches in the upper Copper River, 1989.

		Brood Year and Age Group			
		1985	1984	1983	1982
		1.2	1.3	1.4	1.5
<b>Gulkana River</b>					
Females	Mean Length (mm)		813	912	912
	Std. Error		16.2	10.4	8.5
	Sample Size		11	22	2
Males	Mean Length (mm)	924	923	958	990
	Std. Error	0.0	50.8	12.4	0.0
	Sample Size	1	4	20	1
<b>Klutina River</b>					
Females	Mean Length (mm)		862	946	932
	Std. Error		7.8	5.0	9.1
	Sample Size		18	65	3
Males	Mean Length (mm)	627	845	976	1025
	Std. Error	15.5	17.8	7.4	0.0
	Sample Size	3	29	57	1

Appendix G.8. Mean length by sex and age of sockeye salmon escapements to the Copper River Delta, 1989.

		Brood Year and Age Group											
		1987	1986		1985			1984				1983	
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	2.3	3.2
<b>Eyak Lake -- All Samples Combined</b>													
Sample Dates: 7/12-8/14													
Females	Mean Length (mm)		532		550	503		564	514			570	
	Std. Error		38.0		4.6	3.9		1.5	10.3			2.4	
	Sample Size		2		29	46		295	6			70	
Males	Mean Length (mm)	401	444	408	570	459	390	588	497			594	
	Std. Error	36.7	6.0	11.5	6.8	3.2	28.8	2.8	12.9			5.0	
	Sample Size	3	20	20	36	155	5	229	15			39	
<b>McKinley Lake</b>													
Sample Dates: 7/24													
Females	Mean Length (mm)		475		573	496		584	539			580	
	Std. Error		29.5		5.1	3.3		1.6	0.0			4.3	
	Sample Size		2		6	49		164	1			26	
Males	Mean Length (mm)	320	430	329	610	444	340	596	450			623	
	Std. Error	0.0	3.1	4.2	9.3	1.7	0.0	4.7	5.5			7.3	
	Sample Size	1	30	14	3	207	1	80	17			12	
<b>Twenty-Seven Mile Slough</b>													
Sample Dates: 6/30													
Females	Mean Length (mm)		477		573	500		572	500			578	
	Std. Error		23.7		3.7	13.0		2.1	19.9			9.1	
	Sample Size		4		42	11		123	3			7	
Males	Mean Length (mm)		437	334	594	438	321	587	446			626	
	Std. Error		1.8	3.8	21.7	1.7	0.0	13.8	5.1			9.8	
	Sample Size		94	9	10	187	1	19	9			4	
<b>Ragged Point River</b>													
Sample Dates: 7/07													
Females	Mean Length (mm)		502		565	499		573	520			571	
	Std. Error		5.3		3.9	3.4		2.4	1.2			6.1	
	Sample Size		21		31	46		112	3			23	
Males	Mean Length (mm)	435	454	342	590	455	326	591	479			608	
	Std. Error	0.0	3.9	8.2	21.4	4.1	0.0	5.9	26.4			4.7	
	Sample Size	1	105	15	10	114	1	66	6			22	
<b>Martin Lake</b>													
Sample Dates: 7/20													
Females	Mean Length (mm)		475	419	554	496		565	490			570	
	Std. Error		10.8	0.0	5.9	3.0		1.9	6.1			3.2	
	Sample Size		4	1	12	52		139	18			55	
Males	Mean Length (mm)		431	331	613	444	329	612	462			610	
	Std. Error		3.0	3.5	8.5	2.4	7.0	3.3	7.3			5.4	
	Sample Size		33	23	4	161	6	24	22			12	

-Continued-

Appendix G.8. (Pg 2 of 2)

		Brood Year and Age Group											
		1987	1986		1985			1984				1983	
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	2.3	3.2
<b>Little Martin Lake</b>													
Sample Dates: 7/27													
Females	Mean Length (mm)					499			566	506		570	522
	Std. Error					3.3			2.8	4.6		2.5	0.0
	Sample Size					53			42	29		55	1
Males	Mean Length (mm)		429	329		441	326		588	439	315	589	457
	Std. Error		0.0	2.5		1.8	2.1		5.7	3.1	0.0	4.9	0.0
	Sample Size		1	79		114	60		35	38	1	28	1
<b>Tokua Lake</b>													
Sample Dates: 8/08													
Females	Mean Length (mm)				549	495			567	501		566	
	Std. Error				0.0	3.2			2.2	20.0		3.7	
	Sample Size				1	54			93	2		5	
Males	Mean Length (mm)				593	443			600	426		577	
	Std. Error				10.0	1.1			2.5	15.0		14.5	
	Sample Size				2	283			151	2		4	
<b>Pleasant Creek</b>													
Sample Dates: 7/01													
Females	Mean Length (mm)		531		573	499			574	511		565	
	Std. Error		16.0		3.0	6.1			1.9	17.0		0.0	
	Sample Size		2		38	24			143	2		1	
Males	Mean Length (mm)		435	319	615	435	363		610	433		603	
	Std. Error		5.9	0.0	6.5	2.4	0.0		2.8	4.1		16.0	
	Sample Size		9	1	21	57	1		112	4		2	
<b>Martin River Slough</b>													
Sample Dates: 7/06													
Females	Mean Length (mm)		499		561	483			571	495		559	
	Std. Error		8.6		4.8	3.7			3.1	9.8		5.8	
	Sample Size		6		20	12			58	3		12	
Males	Mean Length (mm)		435	309	589	434	324		592	437		588	439
	Std. Error		1.8	0.0	13.3	1.3	0.0		8.3	3.6		19.3	0.0
	Sample Size		193	1	12	308	1		29	36		4	1
<b>Thirty-Nine Mile Creek</b>													
Sample Dates: 7/14													
Females	Mean Length (mm)		475		582	498		585		484		581	
	Std. Error		0.0		5.4	8.0		1.6		13.4		3.3	
	Sample Size		1		11	21		173		8		43	
Males	Mean Length (mm)		439	337	610	446	328	612		451		610	
	Std. Error		1.8	11.1	7.9	3.7	3.3	3.4		5.2		4.3	
	Sample Size		8	5	9	85	4	119		21		32	



Appendix G.9. Mean length by sex and age of sockeye salmon escapements to the Bering River, 1989.

		Brood Year and Age Group							
		1986		1985			1984		1983
		0.2	1.1	0.3	1.2	2.1	1.3	2.2	2.3
<b>Bering Lake</b>									
Sample Dates: 7/10									
Females	Mean Length (mm)			590	479		570	429	570
	Std. Error			14.1	8.0		1.5	0.0	4.6
	Sample Size			3	8		256	1	31
Males	Mean Length (mm)	423	344	529	442		601	426	599
	Std. Error	5.6	7.7	3.5	3.0		2.1	9.0	5.8
	Sample Size	12	8	2	63		182	4	19
<b>Kushtaka Lake</b>									
Sample Dates: 8/04									
Females	Mean Length (mm)	461			476		534	464	533
	Std. Error	0.0			6.5		1.5	3.2	1.4
	Sample Size	1			26		172	17	218
Males	Mean Length (mm)				451	327	538	462	538
	Std. Error				3.2	0.0	1.9	4.7	2.3
	Sample Size				31	1	145	14	132

Appendix G.10. Mean length by sex and age of chinook salmon carcasses sampled from the Gulkana River, 1989.

		Brood Year and Age Group			
		1985	1984	1983	
		1.2	1.3	1.4	2.3
Females	Mean Length (mm)	780	889	894	855
	Std. Error	0.0	8.9	6.7	0.0
	Sample Size	1	34	40	1
Males	Mean Length (mm)	745	935	975	865
	Std. Error	0.0	14.8	6.6	0.0
	Sample Size	1	23	37	1

Appendix G.11. Mean length by sex and age of sockeye salmon from commercial common property purse seine and drift gillnet catches in the Coghill and Unakwik districts, Prince William Sound, 1989.

		Brood Year and Age Group					
		1985	1984		1983		1982
		1.2	1.3	2.2	1.4	2.3	2.4
<b>Coghill District</b>							
Sample Dates: 6/21,7/04							
Females	Mean Length (mm)	524	587	518	584	583	
	Std. Error	12.3	0.9	12.2	11.8	4.2	
	Sample Size	7	513	6	3	21	
Males	Mean Length (mm)	522	613	514	664	614	
	Std. Error	45.4	1.3	25.9	0.0	7.2	
	Sample Size	3	369	5	1	12	
<b>Unakwik District</b>							
Sample Dates: 6/29							
Females	Mean Length (mm)	535	586	592	570	582	0
	Std. Error	14.5	1.7	46.5	8.1	5.7	0.0
	Sample Size	2	214	2	3	18	0
Males	Mean Length (mm)	465	608	491	0	608	681
	Std. Error	0.0	1.8	63.0	0.0	10.2	0.0
	Sample Size	1	173	2	0	9	1

Appendix G.12. Mean length by sex and age of sockeye salmon in sampled escapements to Prince William Sound, 1989.

		Brood Year and Age Group										
		1986		1985				1984		1983		1982
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	2.4
<b>Coghill Weir</b>												
Sample Dates: 6/22-7/28												
Females	Mean Length (mm)		580		506	595		579	530	609	579	582
	Std. Error		0.0		7.8	0.0		0.8	8.3	5.2	2.3	11.7
	Sample Size		1		11	1		866	24	4	104	5
Males	Mean Length (mm)			630	475	343		614	465	613	619	636
	Std. Error			0.0	10.9	14.7		1.4	5.3	13.6	3.2	8.3
	Sample Size			1	46	6		575	65	3	90	6
<b>Eshamy Weir</b>												
Sample Dates: 7/16-8/28												
Females	Mean Length (mm)		551		552			589	549		596	
	Std. Error		10.4		1.0			5.7	5.5		9.7	
	Sample Size		15		793			50	94		7	
Males	Mean Length (mm)		557		575			615	571		618	
	Std. Error		11.6		1.2			6.1	3.9		12.2	
	Sample Size		16		605			39	82		5	
<b>Jackpot Weir</b>												
Sample Dates: 7/17-8/14												
Females	Mean Length (mm)			600	545			586	530	598	585	
	Std. Error			16.0	1.5			3.0	14.5	0.0	5.6	
	Sample Size			2	2			96	5	1	11	
Males	Mean Length (mm)	559		655	564		620	620	566		630	
	Std. Error	0.0		0.0	5.0		0.0	1.5	11.8		6.7	
	Sample Size	1		1	17		1	203	8		14	

Appendix G.13. Mean length by sex and age of chinook salmon from the Wally H. Noerenberg Hatchery brood stock, 1989.

		Brood Year and Age Group			
		1986	1985	1984	1983
		1.1	1.2	1.3	1.4
Sample Dates: 7/23–8/21					
Females	Mean Length (mm)	670		811	815
	Std. Error	0		4.9	15.0
	Sample Size	1		41	2
Males	Mean Length (mm)		900	847	870
	Std. Error		0.0	11.1	33.3
	Sample Size		1	23	4

Appendix G.14. Mean length by sex and age of chum salmon from the Wally H. Noerenberg Hatchery brood stock, 1989.

		Brood Year and Age Group			
		1986	1985	1984	1983
		0.2	0.3	0.4	0.5
Sample Dates: 7/08–8/11					
Females	Mean Length (mm)	576	617	671	694
	Std. Error	7.7	2.1	3.8	3.9
	Sample Size	4	206	89	54
Males	Mean Length (mm)	549	639	698	726
	Std. Error	12.5	2.4	4.1	5.3
	Sample Size	11	185	92	39



## **APPENDIX H**

Average Weights of Salmon in the  
Copper/Bering Rivers and Prince William Sound  
Commercial Catch.



Appendix H.1. Average salmon weights from the commercial common property gillnet and purse seine fisheries in the Copper/Bering and Prince William Sound areas, 1989.<sup>a</sup>

Area and Fishery	Average Weight (in pounds)				
	Chinook	Sockeye	Coho	Pink	Chum
Copper/Bering Drift Gillnet	26.64	6.72	0.11	4.02	7.85
Prince William Sound Drift Gillnet	16.62	7.24	6.42	3.60	8.81
Prince William Sound Set Gillnet <sup>b</sup>					
Prince William Sound Purse Seine	15.53	6.54	8.01	3.48	8.69

<sup>a</sup> Typically during each fishing period a portion of each delivery to a tender boat is counted into a brail, weighed, and the average weight is computed by dividing the net weight of the brail load by the number of fish. This average weight is used to estimate the number of fish in the total delivery. The average weight in this table is based on the total weight of the catch by species, gear type, and fishery from fish ticket summaries divided by the total number of fish sold by species, gear type, and fishery as reported on fish tickets.

<sup>b</sup> No set gillnet catches occurred in Prince William Sound during 1989.



The Alaska Department of Fish and Game conducts all programs and activities free from discrimination on the basis of sex, color, race, religion, national origin, age, marital status, pregnancy, parenthood, or disability. For information on alternative formats available for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-4120, (TDD) 1-800-478-3648, or (fax) 907-586-6595. Any person who believes he or she has been discriminated against by this agency should write to: ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; or O.E.O., U.S. Department of the Interior, Washington, DC 20240.